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# REDUCING EXCESS HOSPITAL CAPACITY

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Bureau of Health Planning & Resources Development
Department of Health, Education & Welfare

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# REDUCING EXCESS HOSPITAL CAPACITY

by
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October 15, 1976

The views herein are solely those of the author, and no endorsement by the Bureau of Health Planning & Resources Development or the federal government is expressed or implied.

# TABLE OF CONTENTS

EXECUTIVE SUMMARY i

EXTENDED SUMMARY OF RECOMMENDATIONS vi

INTRODUCTION AND MOTIVATION 1

I. HEALTH, HOSPITAL USE, AND EXCESS HOSPITAL CAPACITY 3

A. The Growth in Acute Hospital Care: Cost, Use, Intensity and Capacity 3

B. The Relationship of Health Care to Health 8

C. Defining Excess Hospital Capacity 11

D. The Relationship Between Hospital Capacity and Hospital Use 15

E. The Amount of Excess Under-utilized Hospital Capacity 17

F. The Amount of Excess Excessively-utilized Hospital Capacity 22

G. The Effect of Reducing Hospital Capacity upon Utilization and Health: the "Reverse Roemer Effect" 29

H. Conclusions 31

II. COSTS, BENEFITS AND SIDE-EFFECTS OF EXCESS HOSPITAL CAPACITY REDUCTION 35

A. Savings and Costs 35

B. The Implications of Excess Hospital Capacity Reduction for Health Policy 40

C. Local Side-effects of Excess Hospital Capacity Reduction 46

D. Conclusions 52

III. CAUSES OF AND PAST EXPERIENCE WITH EXCESS HOSPITAL CAPACITY 54

A. Causes of Excess Hospital Capacity 54

B. Experience with Previous Efforts to Reduce Excess Hospital Capacity 58

C. Conclusions 68

TABLE OF CONTENTS (Cont.)

IV. IDENTIFYING EXCESS HOSPITAL CAPACITY FOR REDUCTION 70

A. Current Planning Methods: Demand-Based 70

B. Population-Based Health Planning 74

C. A Modified Method to Project Hospital Capacity 78

D. Technical Methods to Identify Excess Hospital Capacity 80

E. Problems in the Technical Methods to Identify Excess Capacity 90

F. Conclusions 93

V. STRATEGIES TO REDUCE EXCESS HOSPITAL CAPACITY 94

A. Strategies and Stances 94

B. Collateral Strategies 103

C. Strategies to Build Public and Provider Support for Excess Hospital Capacity Reduction 109

D. Technical Methods to Reduce Excess Capacity 117

E. Conclusions 134

VI. THE ADMINISTRATION AND FINANCING OF EXCESS HOSPITAL CAPACITY REDUCTION 136

A. Who Should Administer Excess Hospital Capacity Reduction? 136

B. Administrative Arrangements 137

C. Financing Excess Hospital Capacity Reduction 139

D. Incentives on Regulators of Hospital Capacity 140

E. Conclusions 142

VII. NEXT STEPS: CONCLUSIONS AND RECOMMENDATIONS 143

A. Summary of Major Findings and Conclusions 143

B. General Goals and Policies for Reducing Excess Hospital Capacity 146

VII. NEXT STEPS: CONCLUSIONS AND RECOMMENDATIONS (Cont.)

C. Specific Objectives for Reducing Excess Hospital Capacity, Use and Expenditures 148

D. Recommended Policy Actions to Reduce Excess Hospital Supply and Demand 152

E. Federal Actions to Directly Reduce Excess Hospital Capacity 158

F. State Actions to Directly Reduce Excess Hospital Capacity 161

G. Private Sector Actions to Directly Reduce Excess Hospital Capacity 164

H. Health Systems Agency Actions to Directly Reduce Excess Hospital Capacity 164

APPENDIX A. Estimates of Savings from Excess Hospital Capacity Reduction A-1

B. Legal Issues in Excess Capacity Reduction B-1

C. A Preliminary Decision Tree for Licensing Down C-1

D. Statement of Robert Derzon before the California Legislature D-1

REFERENCES Ref-1

# REDUCING EXCESS HOSPITAL CAPACITY

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## EXECUTIVE SUMMARY

### Scope of Report

This summary highlights the major findings and recommendations of a report addressed to the question: Should hospital capacity in the United States be reduced, and if so, how? By capacity is meant not only hospital beds but the labor, service equipment, and plant assets associated with those beds; it is excess in the labor and capital intensity of beds, as well as in the number of beds, which generates excessive acute inpatient care cost. The report deals only with short-term general hospitals; the results below do not apply to long-term hospitals. While no single study of this difficult, value-laden issue can be definitive, the report is intended to suggest a solid and defensible basis upon which to initiate policy discussion and development.

### Summary of Major Findings and Conclusions

The report finds substantial evidence of excess hospital capacity which contributes significantly to medical cost escalation with little or no benefit to health. If done in an orderly and appropriate manner, it would appear that hospital capacity in the United States could be reduced, conservatively, by at least 20% or more without harm to the health of the American people. The savings produced by capacity reduction could be substantial (up to several billion dollars annually), but depend crucially upon how it is done. More particularly:

-- Hospital capacity could be reduced 5% to 10% simply by retiring idle capacity and using remaining capacity more efficiently. Occupancy rates currently average 75% nationally. Retiring capacity until average occupancy rates were increased to 85% -- an average rate that is both efficient and achievable in practice -- would permit a 10% reduction in the national bed rate from its present value of 4.4 beds to 4.0 beds per 1000 population, assuming use rates remained unchanged.

-- Increased hospital capacity of itself causes an increase in hospital use; conversely, reduction in hospital capacity appears to decrease hospital use. Hospital use is correlated with hospital capacity rather than with indices of health or need. Excess hospital capacity thus aggravates excessive hospital use. Among quite comparable typical populations, hospital use presently varies from 600 to 1600 patient days per 1000 persons, a variation far greater than any known health risk factors in the population can account for. Research shows these variations in use to be closely tied to available hospital capacity, which ranges from less than 3 to more than 7 beds per 1000 persons, again far more than known population differences can explain. With respect to health, research suggests that a reasonably well organized health care system could adequately serve the U.S. population with as few as 600 to 800 patient days or less per 1000 persons (equivalent to 2.0 to 2.6 beds per 1000 persons at 85% occupancy); beyond this minimum level no correlation is observed between additional hospital use (or capacity) and such health indices as mortality, morbidity, disability and self-reported health status rates. In contrast, the present U.S. average is 1200 patient days (and 4.4 beds) per 1000 persons.

-- Hospital capacity could be reduced at least an additional 10% or more without harm to health by retiring unnecessarily-utilized capacity.* Given that current hospital use is so far beyond the minimum expected to affect health, it should be more than safe to bring areas of high use and capacity gradually down toward the present national average of 1200 patient days per 1000 persons, equivalent to a maximum of 4.0 beds per 1000 persons at 85% occupancy. (Such a maximum would of course need adjustment for area demographics and out-of-area use.) If appropriate capacity reduction in areas of above average use produced a modest 8% drop in the national average use rate (to 1100 patient days per 1000 persons), the current national average bed rate could be lowered by 20% (to 3.6 beds per 1000 persons at 85% occupancy). If use were further decreased to 1000 patient days per 1000 persons, which also appears quite safe, the bed rate could be dropped to 3.2 beds per 1000 persons, a 30% decrease.

-- Similar excess capacity, both under-utilized and unnecessarily-utilized, appears to be present in high intensity service facilities. While no national studies are available, studies in areas of high use find such highly labor and capital intensive facilities as coronary care units and cardiac surgery units to have capacity often as much as double the most optimistic projections of use or need. And for many patients in these facilities, much lower intensity treatment would be equally appropriate.

---

* The difference between high and low hospital use rates does not represent any conspiracy of providers to over-provide the American people with hospital services. Rather it represents differences in medical practice styles, some emphasizing liberal use of the hospital and others more conservative use. Both styles appear capable of producing equally good health results. Therefore, by the term "unnecessarily-utilized" we do not imply bad medical care; we simply mean that equal health results could be obtained by less costly alternative styles of practice. Whether more moderate styles of hospital use are too utilitarian for the tastes of American patients and providers remains an open question.

-- The savings produced by reducing excess hospital capacity could be substantial, but depend crucially upon how it is done: retiring entire hospitals produces substantially more savings than an equivalent reduction closing portions of several hospitals. A 10% reduction in hospital capacity, if accomplished by retiring entire hospitals, could reduce annual hospital expenditures by, roughly, up to 8% or so. (In 1975, an 8% reduction in annual hospital expenditures nationally would have amounted to $3 billion). These substantial savings result both from reduced hospital use, due to tighter supply, and from more efficient use of remaining hospitals. The resulting savings would repay the "sunk capital cost" of the retired hospitals within two to four years. In contrast, a 10% capacity reduction achieved by taking across-the-board general cuts at each hospital would produce savings of only 1% or so in annual hospital expenditures. Savings are low because such across-the-board general cuts neither constrain use well (beds are easily set-up and taken down) nor produce more efficient use of other hospitals. A 10% capacity reduction achieved by consolidating and eliminating duplicative, under-utilized service departments among hospitals would produce savings of 4% or so, intermediate between retiring entire hospitals and general reductions at each hospital. A moratorium on net increases in hospital capacity in areas of growing population would eventually produce savings equivalent to retiring whole hospitals. In any of these approaches, additional savings would result from reduction in inpatient physician expenditures, but these would be offset at least in part by increases in ambulatory care expenditures. A 20% reduction in hospital capacity would roughly double these estimated savings.

-- Savings from hospital capacity reduction will be gradually eroded unless hospitals are restrained from excessively increasing the labor and capital intensity of the remaining beds. The principle cause of excess hospital capacity (and excessive health care cost escalation generally) is the combined incentive effects of the present health care system coupled with present comprehensive insurance (both public and private). Thus insurance lowers the price to the consumer and provides a virtual blank check to the physician and hospital, encouraging a spare-no-expense approach as hospitals add and improve desired programs and compete for physician staff and institutional prestige. Any hospital which tries individually to restrict its own capacity can be seriously hurt by this competition. The incentives of the health care system are thus geared to over-emphasize intensive hospital use and capacity. Research on present bed controls (Certificate of Need laws) suggests that where these controls have successfully restrained bed increases, hospitals have simply maintained revenues from third party payers by increasing the labor and capital intensity of beds more rapidly, so that per capita operating and capital costs have risen unabated.

-- While effective reduction of hospital capacity would likely restrain excess hospital use and expenditures, if equal attention is not given to restraining hospital demand, patient queuing and the necessity for increased public-utility types of controls may be significant side-effects. If excessive demand for hospital care remains high while supply is reduced, increased public utility controls will be necessary to restrain remaining hospitals from increasing the amount and intensity of their capacity and/or from engaging in semi-monopolistic pricing, physician selection, and patient selection practices. Patient queues (i.e. waiting for non-urgent admissions) may also occur, particularly in areas where hospital-oriented specialists are excessively concentrated. While not a threat to health if admissions are properly prioritized, patient queuing could cause troublesome political reaction. Both side-effects would be much diminished by successful demand reduction. Since physicians create the demand for hospital care at least as much as do patients, successful measures to reduce hospital demand will have to be aimed at both physicians and consumers. The substantial projected increase in physicians, particularly hospital-oriented specialists, is expected to strongly heighten demand.

-- Hospital capacity reduction is even more a socio-political problem than a technical problem. Technical tools to identify and reduce excess hospital capacity are crude and need refinement, but they are more than adequate to begin; the chief barrier to reduction is the absence of any climate of public support. Even England and Canada, with staggering regulatory authority over their hospitals, have had to proceed quite slowly in reducing excess hospital capacity because of public and provider reaction. Tax subsidies and employment insurance hide the cost consequences of excess hospital capacity from communities that overbuild, but the impact of capacity reduction on local convenience, employment and prestige is immediately apparent. Americans are largely unaware of how excessive their current levels of hospital use and capacity are from a health standpoint, or how much they are paying for this excess. How far and how fast excess hospital use and capacity can be reduced may largely depend on whether the public and providers can be educated to accept some trade-off between the more lavish level of hospital care to which they have become accustomed, and their desires to free resources for other purposes more productive of health and well-being.

## Summary of Major Recommendations

The report recommends that the United States adopt an initial policy goal to reduce hospital capacity by 10% over the next five years by raising average occupancy toward 85% and by bringing areas of high use and capacity down toward a target ceiling of 4.0 beds per 1000 population (with associated ceilings on hospital labor, service facilities and capital assets per 1000 population). A longer term policy goal of lowering this target ceiling eventually to 3.6 beds per 1000 should also be considered. The report recommends that this goal be carried out by a combination of actions to reduce both hospital supply and demand.

Actions to reduce hospital supply include: direct reduction of hospital capacity by a variety of means -- including private sector pressure, financial and other inducements, licensure controls, reimbursement controls and capital controls -- in areas having low occupancy and/or high capacity in excess of the target ceilings; and a moratorium on net increases in hospital capacity in areas of more moderate capacity (and in high capacity areas where population is growing rapidly). Where direct reduction of excess capacity is employed, first priority should be given to retiring entire hospitals, second priority to retiring service departments, and third priority to general bed cuts at each institution.

Actions to reduce hospital demand include: encouraging more front-end cost-sharing in existing hospital insurance; encouraging a variety of alternative delivery systems with intrinsic incentives to hospitalize less; placing reimbursement controls on inpatient physician services in areas of high hospital use; limiting the supply of hospital-oriented physician specialists; and shifting the emphasis of physician education to include ambulatory alternatives to inpatient care.

Hospital capacity reduction is a long-term proposition offering no quick or easy fix. Initial efforts in this strategy would emphasize setting goals and building public support, encouraging private sector efforts (by group buyers as well as providers), sponsoring demonstration projects, and strengthening the technical and administrative systems necessary. Later stages would become more systematic and, if necessary, coercive.

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The report on which this summary is based was prepared for the Bureau of Health Planning and Resources Development, DHEW, under Contract HRA-230-76-0086.

# EXTENDED SUMMARY OF RECOMMENDATIONS

This summary elaborates the recommendations of the executive summary in more detail. These actions are recommended to all parties in a position to act upon them, including private leaders in business, labor and the health care system, and public officials at the federal, state and local level.

## Recommended Actions to Reduce Excess Hospital Supply

The following actions would appear helpful to directly reduce excess hospital capacity:

-- Set an initial policy goal of reducing excess hospital capacity by 10% over the next five years by moving toward the following objectives:

- A target minimum average occupancy rate of 80% in all planning areas where population density is not so sparse as to preclude it, and improved occupancy where possible in sparsely populated areas;
- A target ceiling on hospital capacity of no more than 4.0 beds (and associated service facilities, labor, and capital assets) per 1000 population in any planning area, with appropriate adjustment for area demographics and out-of-area use.

Set a long-term policy goal of raising average occupancy to 85% and lowering the target ceiling on hospital capacity to 3.6 beds (and associated labor and capital) per 1000 population over an unspecified period of years. Announce both initial and long-term goals together at an appropriate time. The target goal for occupancy gets at idle capacity (and should have some effect on excessive use, also).* The target ceiling on capacity gets at both idle and excessively-utilized capacity. These explicit targets force society to inform providers in measurable terms of what society expects -- what it thinks is efficient, and how much it believes is enough -- rather than charging providers with vague accusations of inefficiency and excess for what are properly social decisions. They also provide responsible community and private leaders concerned about cost control with defensible objectives they can act upon. Announcing long-term goals at the same time as initial goals will discourage areas with less than 4 beds per 1000 population from moving up. Public announcement of these policy goals should come after a reasonable effort has been made to alert the public to the problem, so that the goals receive support. These goals can be espoused not only by various levels of government but by private sector organizations as well.

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* Ideally, it is not hospitals with low occupancy but rather hospitals with excessive use, no matter what their occupancy, that should be reduced, so as to raise occupancy at more efficient hospitals. The target minimum occupancy goal of 80% is an average across all hospitals in each planning area; smaller hospitals might be lower but larger hospitals should be higher, so that average occupancy exceeds the minimum.

-- Build a climate of public support for reducing excess hospital capacity. By a variety of means (including hearings, blue ribbon reports, conferences, high level announcements, articles and reports in popular trade media, demonstrations, informal discussion and jawboning), public and private leaders should attempt to raise public awareness of excess hospital use and capacity. This action should receive high priority, for without reasonable public support other recommended actions are likely to have but limited success. Initial emphasis should be placed on explaining the problem and need for reduction; particular solutions can be discussed as public understanding becomes receptive.

-- Attempt to involve the private sector -- business, labor, insurers, and providers -- as well as the public sector in efforts to reduce excess hospital capacity. Both the private and public sector can and should participate in reducing excess hospital capacity. At least three approaches are possible:

- Private sector approach. Business, labor, and insurers organize coalitions or task forces to use their community influence and collective purchasing power to negotiate reduction in excess hospital capacity with providers.

- Public sector approach. Government expands its regulatory powers over licensure and reimbursement to reduce excess capacity, and maintains the reduction by expanded Certificate of Need and other capital controls.

- Mixed public-private approach. Government acts as a mediator in formal bargaining sessions between the buyers (business, labor, third parties) and providers. Government sets overall planning guidelines for the bargaining and enforces the decisions made.

The private sector can move much more rapidly and flexibly than can government. Existing regulatory authority (residing mainly at the state level) is largely inadequate to effectively reduce excess capacity; both time and public support will be required to strengthen it. Private sector action thus provides a way to initiate efforts immediately, and may avoid the necessity for overly-stringent regulation. Even if a private approach does not succeed, the effort will educate the private sector and build support for such regulatory controls as may eventually be required. The private sector should therefore be given every opportunity and encouragement before government steps in.

-- Conduct demonstration projects. The federal government, states, foundations, insurers and private group buyer coalitions should make available technical assistance and financial support to conduct demonstration projects in communities wishing to attempt reduction in excess hospital capacity. Careful monitoring and evaluation would permit these demonstrations to serve as models for later, more systematic efforts to reduce excess capacity. Legislation to appropriate funds for demonstration projects would provide opportunity for public hearings and enunciation of goals regarding excess hospital capacity.

-- Coordinate public health care delivery, financing and regulatory programs with private and public efforts to reduce excess hospital capacity. Federal, state and local hospitals (e.g. Veterans Administration, Public Health Service, municipal and other public hospitals offering acute inpatient care) should be brought into private and public planning and/or regulatory efforts to reduce excess hospital capacity. Medicare, Medicaid and the Federal Employees Health Benefits Program should actively seek out and cooperate with private and public efforts to reduce excess hospital capacity; in particular, they should coordinate their reimbursement practices with any reimbursement controls on excess capacity, and make funds available to assist reduction. Federal loans and guarantees to hospitals, now in excess of $2 billion, should be sharply curtailed in areas of excess capacity. States should strengthen and coordinate their regulation of licensure, provider reimbursement, health insurance rates, public disclosure of hospital data, and Certificate of Need to bring pressure on excess capacity. The report details a variety of controls and inducements which can be tailored to the particular situation, in which these various programs and authorities could individually and jointly engage.

-- Shift from demand-based to population-based planning. Current planning methods project future hospital capacity requirements from trends in present hospital use. The well-established research result that hospital capacity begets hospital use shows such "demand-based" methods are self-fulfilling and inflationary. Planning should emphasize "population-based" methods, which establish a range of hospital use and capacity levels for various services adequate to care for a population of specified demographic characteristics, and then hold each planning area within those standards (making allowance for out-of-area use). Planners should be trained in these methods. Population-based planning methods are crude but adequate enough to begin with. Research and development should be initiated to refine the methods, and data systems should be put in place to monitor per capita hospital expenditure, use and capacity rates in each planning area. These data systems will show which planning areas are within the target ceilings and whether the planning is effectively containing costs.

-- Shift toward performance-related regulation, based on a "lid." Present fragmented cost control regulation tends to fall equally on efficient and inefficient providers; its objectives, and therefore its effectiveness, are difficult to measure; and it appears unlikely to work well. If regulatory pressures are strengthened, they should be coordinated and move toward a measurable budgetary "lid," the regulatory approach most likely to work well. The regulation should be related to performance, rewarding efficient providers and penalizing inefficient providers. Regulation could be performance-related by establishing desired target ceilings for per capita hospital expenditures as well as for hospital use and capacity in each planning area (using a population-based approach which adjusts for area demographics and out-of-area use).

Existing and new regulatory controls would be applied with increasing severity on providers in planning areas where target ceilings were exceeded: successive mandatory cuts would be made in hospital capacity, in hospital reimbursement (and inpatient physician reimbursement, see below), in allowed capital investments, etc., until performance fell within the target ceilings. Providers in planning areas where performance fell within the target ceilings would be exempt from such controls, as would any providers in other planning areas who could demonstrate to the regulators' satisfaction that their patient population was not contributing to the area's excess expenditures, use and/or capacity. This performance-related regulatory approach (called "quasi-lidding" for short) forces society to make decisions on how much hospital care is enough; gives providers maximum opportunity and incentive to perform well so as to escape regulation; minimizes regulation to where it is needed; provides measurable objectives to coordinate and evaluate regulation; and points regulation toward an eventual budgetary "lid." As an initial target ceiling for hospital expenditures, the report suggests that all planning areas with hospital use and capacity in excess of area target ceilings be held to a maximum 10% annual increase in per capita hospital expenditures.

-- Strengthen incentives on regulators and communities to reduce excess hospital capacity. The most powerful incentive to make the difficult trade-offs necessary in reducing excess hospital capacity is cost. The present trend to shift the cost burden away from the local level to the national level -- via national accounts and tax subsidies in private insurance, and via federal open-ended financing of Medicare and Medicaid -- tends to insulate local areas that overbuild hospital capacity from the cost consequences of their excesses. (This trend will likely produce an extremely centralized regulatory apparatus). The report suggests a number of ways to shift the open-ended portion of hospital expenditures to the state, community and even individual level to help build local pressure for controlling excess capacity. A second type of incentive is to publicize comparative rates of per capita hospital capacity, use and expenditures (vs. target ceilings) across planning areas. The variations are startling, and publicity may create pressure on planning areas to perform better. Finally, the provision of grants to assist reduction and buy out debt obligations, and to support conversion of acute inpatient facilities to other health and social services or even to civic or commercial use, may provide a more positive inducement to retire excess hospital capacity.

## Recommended Actions to Reduce Excess Hospital Demand

While the report deals more fully with direct reduction of hospital supply, it recommends that actions be taken simultaneously to reduce demand. If supply constraints are used alone to curtail excess hospital use and expenditures, the constraints will have to be exceedingly strong and will produce patient queues (and their attendant political repercussions) in areas where demand is excessive. These actions address both consumer and physician-induced demand:

-- Encourage consumer cost-sharing. Strong front-end* deductibles and coinsurance in hospital insurance coverage, with a maximum limit on the consumer's cost share, will reward consumers who economize on medical care and seek out efficient providers, while still providing complete financial protection from undue expense. The maximum cost-share limit should be income-related (e.g. lowered proportionately) for lower income consumers. Except for low income persons, front-end ambulatory care should not be insured (so as to avoid over-use of ambulatory care similar to present over-use of hospital care); rather, front-end coinsurance and deductibles on hospital care should be made sufficiently large -- $500 to $1000 -- that hospital care does not appear more financially attractive than ambulatory alternatives. Such cost-shared insurance could be encouraged by offering it as a choice to employees in lieu of their present coverage, with the employee allowed to pocket any savings in premium costs as tax-free income or additional fringe benefits.

-- Encourage alternative delivery systems. HMOs, Health Care Alliances (e.g. insurance plans covering a limited number of more efficient providers at reduced premiums) and other alternative delivery systems with incentives to reduce excess hospital use should be encouraged. Business, labor and providers can sponsor such systems and offer them as a choice to employees. Federal and state governments can enact enabling and assistance legislation which makes it easier for consumers and providers to participate in these alternative systems. Alternative delivery systems should be particularly encouraged in areas with excess hospital use in order to stimulate competitive pressure on the traditional system, rather than in underserved areas where their competitive effect is less needed.

-- Reduce increases in physician manpower, especially hospital-oriented specialists. Present manpower policies are projected to increase the physician to population ratio 50%, and the ratio of surgical specialists to population by 80%, by 1990, greatly exacerbating excess hospital demand particularly in professionally attractive areas where hospital-oriented specialists tend to concentrate excessively. Since present physician to population ratios, particularly for hospital-oriented specialists, appear far more than adequate to effectively serve the population, these increases should be reduced as much as possible, and efforts should be made to better distribute physicians by location and specialty. Physician manpower could be moderated by reversing present policies to expand medical schools and by limiting foreign medical graduate immigration. Hospital-oriented specialty manpower could be restrained by severely limiting residency training support, and by conditioning other federal and state support of hospitals and medical schools upon reduction in such residencies. Medical schools could be similarly encouraged to better train physicians in ambulatory alternatives to hospital care.

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* By front-end is meant the first several hundred dollars of hospital expense.

-- Place performance-related controls on inpatient physician reimbursement and hospital insurance cost-sharing. In planning areas where per capita hospital capacity, use and expenditures exceed target ceilings, inpatient physician fees could be reduced in successive increments until performance came within the ceilings. This would act as an incentive for physicians to discourage increases in hospital capacity, to use ambulatory alternatives to hospital care, and perhaps even to avoid the controls by locating in areas where target ceilings were not exceeded. (Relocation in underserved areas could be enhanced by encouraging more attractive organizational arrangements there, especially by encouraging multispecialty groups to set up formal branches in such areas. This combination of making over-served areas less attractive, by competition from alternative delivery systems and by reimbursement regulation, and making underserved areas more attractive, by improved organizational arrangements, might begin to alleviate physician maldistribution, itself a cause of excess hospital use and capacity.) Performance-related controls could also require mandatory front-end cost-sharing in health insurance policies in those planning areas where insured enrollments had per capita hospital use and expenditures exceeding the target ceilings (the ceilings would be adjusted to the demographic characteristics of the insureds in applying such controls).

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The report on which this summary is based was prepared for the Bureau of Health Planning and Resources Development, D.H.E.W., under Contract HRA-230-76-0086.

# INTRODUCTION AND MOTIVATION

This study is directed to the question:

- Should hospital capacity in the United States be reduced, and if so, how?

While this study concentrates on hospital capacity, it does so motivated by a larger issue: the rising cost of medical care. Simply stated, medical care is absorbing an ever increasing portion of the nation's GNP and interfering with the allocation of limited national resources to other pressing human service needs and national priorities.* There is no evidence that the nation is measurably healthier for this substantial investment in medical care,** and moreover, there is growing evidence that a considerable reduction in the cost and style of medical care could be made with no adverse effect on the nation's health.

Short-term general hospital care arouses special concern. It is not only the largest but most inflationary sector of health care. The sheer size plus the, so far, uncontrollable growth of acute hospital expenditures has generated strong pressure and effort toward their containment. This pressure is further strengthened by three major findings emerging from a growing body of research. First, research has so far been unable to find any significant correlation between health levels and this substantial increase in hospital use. Thus from a health standpoint, much of the increase in hospital use -- and the hospital capacity and cost associated with it -- would have to be deemed excessive. Second, research has confirmed the existence of the so-called Roemer effect that "beds beget patients": the more hospital capacity provided, the more it tends to be used. Thus the hospital capacity we have added is in part generating its own use. Finally, there is evidence that we are over-building hospital capacity, resulting in falling occupancy rates. This means not only have we expensive idle capacity lying about but, by the Roemer effect, this idle capacity is likely to further exacerbate excessive use. These results call into question the real value of this massive growth in the hospital sector.

So far, hospital expenditures have resisted efforts at control, and new controls are being sought. The findings above indicate the presence of both excess hospital use and capacity. They suggest that a reduction in excess capacity might not only reduce idle capacity but also reduce excessive use, producing possibly significant savings in hospital expenditures. Determination of the validity and feasibility of this suggestion, and recommendations for action, constitute the scope of this study.

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* The difference between the Ford and Schlesinger defense budgets, which led to the Secretary's resignation, was about $7 billion. The annual increase in Medicare and Medicaid alone was over $5 billion that year.

** The lowest income groups may have derived some benefit; how much is unclear. However, most population groups have shown substantial increases in use and cost which have no known correlation with health indices.

This report is not intended to produce the definitive answer to whether the United States should reduce excess hospital capacity, or to produce the definitive recipe for doing so. That answer can only be provided by the American people. And, at our present level of understanding, no single recipe would appear to be technically or politically feasible in all situations. Rather, this report is intended to identify (1) the magnitude of the problem, (2) the advantages and disadvantages and issues involved in attempting excess capacity reduction, and (3) a review of the state of the art, citations to the relevant literature, and constructive and even speculative suggestions about methods and policies that might be employed to reduce excess capacity. It should be regarded as a first step rather than the final statement on this difficult and complex subject. We hope the report proves a fertile idea source for planners and policymakers at all levels, public or private, engaged in decisions and design of excess hospital capacity reduction policy.

Throughout this report we use the term hospital "capacity," rather than hospital beds. As will later be discussed, beds are a very poor measure of hospital size. By capacity we mean the capability of a given hospital to perform services and generate costs. Thus hospital capacity includes beds, capital equipment, manpower and all the other factors which go to producing services and costs. It is excess in this capacity about which we will now inquire.

In conducting this study we not only reviewed the literature but identified and interviewed over forty experts, representing both the theoretical and practical aspects of the field. Our interviewed experts included scholars, planners, public officials, professional and voluntary association officials, physicians, insurers, and hospital administrators. We received invaluable education from these experts and express our great appreciation. Because so many spoke off the record and with great candor, we have chosen not to identify them or make attribution except where published material is already available. It is therefore with much feeling that we repeat that time-honored phrase: For such strengths as this report may have, these individuals deserve much of the credit; its weaknesses are the sole responsibility of the author.

# Chapter I

## HEALTH, HOSPITAL USE, AND EXCESS HOSPITAL CAPACITY

This chapter addresses two questions:

- Does excess acute hospital capacity exist which substantially contributes to and/or drives up medical cost without benefit to health?
- How much might such excess capacity be safely reduced without harm to health or the effectiveness of the medical care system?

We begin with some background on the growth of the hospital sector, and then summarize the evidence bearing on these two questions.

### A. The Growth in Acute Hospital Care: Cost, Use, Intensity and Capacity

The growth in acute hospital expenditures has been both dramatic and chronic, not only in absolute terms but relative to GNP and all other health care expenditures. (See Table 1.) Between 1960 and 1974, the proportion of GNP consumed by health care rose from 5.3% to 8.0%. In the same period, the proportion of the health care dollar consumed by acute hospital care (excluding construction) rose from 21% to 30%. In other words, acute hospital care is the largest and most rapidly inflating portion of a health care system that is already one of the most inflationary large sectors of the economy.

TABLE 1. SELECTED EXPENDITURES (in billions)

| Year | GNP | All Health Care: Amount | as % of GNP | Acute Hospital Care: Amount | as % of Health Care |
|---|---|---|---|---|---|
| 1960 | $503.7B | $26.89 B | 5.3% | $5.62 B | 20.9% |
| 1965 | 684.9 | 40.47 | 5.9 | 9.15 | 22.6 |
| 1970 | 977.1 | 72.96 | 7.5 | 19.56 | 26.8 |
| 1974 | 1397.3 | 111.57 | 8.0 | 32.75 | 29.4 |

Sources: GNP and All Health Care from SSA Research and Statistics Notes 5, 1976
Acute Hospital Care from AHA Guide Issue, 1975

Every aspect of the hospital cost equation has experienced this growth: the price of services, the use of services, the "intensity" of services,* and hospital capacity (see Table 2a,b,c,d). The following observations seem pertinent:

Expenditures (Table 2a):

- The hospital price index and cost per day capture only part of hospital cost escalation. The hospital price index only reflects pure service price inflation. The cost per day additionally reflects increasing intensity of services. But only per capita hospital expenditures captures all these factors plus the increasing number of patient days provided. Thus per capita hospital expenditures is the best single index of hospital cost escalation.

- Since 1960 the consumer price index has increased 170%, the hospital semi-private room price index has increased 350%, the all-inclusive cost per hospital day has increased 400%, but per capita hospital expenditures have increased 500% to an average $155 for every man, woman and child in 1974. This increase has not led to commensurate gains in health (see Section B below), indeed longevity and disability seem poorly correlated with per capita health care expenditures.

Utilization (Table 2b):

- Length of stay, after reaching a high of 8.45 days per hospital episode in 1968, has declined to 7.8 days. (In 1960 length-of-stay was 7.6 days). No reported medical harm has ensued from this downward trend.

- At the same time length of stay began to decrease, admissions started to increase sharply. Admissions per 1000 persons rose 12% in the ten years from 1960 to 1970, but have increased another 10% in the four years since and now stand at 155 admissions per 1000 persons.

- The sharp increase in admissions has offset the decline in length of stay, so that we are actually using more total patient days per 1000 persons. After leveling off in 1971 and 1972, patient days have again continued their upward trend. The present value, 1207 days per 1000 persons, is up 25% from the 1960 value.

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* By service "intensity" is meant the degree to which a service requires more or less labor and capital inputs. Complex technological services requiring greater inputs per service are termed "high intensity," and medical practice styles emphasizing aggressive use of high intensity services are termed "high style."

## TABLE 2: SELECTED ACUTE HOSPITAL STATISTICS

### TABLE 2a: INDICES OF ACUTE HOSPITAL EXPENDITURES AND PRICES

| Year | Hosp. Exp. Per Capita: | | Cost per Day: | | Hospital Price Index (semi-private room) (1960 = 100%) | Consumer Price Index (1960 = 100%) |
|---|---|---|---|---|---|---|
| | Amount | % increase since 1960 | Amount | % increase since 1960 | | |
| 1960 | $ 31.08 | 100% | $ 32.23 | 100% | 100% | 100% |
| 1965 | 47.08 | 151% | 44.48 | 138% | 132% | 107% |
| 1970 | 95.46 | 307% | 81.01 | 251% | 254% | 131% |
| 1971 | 108.16 | 348% | 92.31 | 286% | 285% | 137% |
| 1972 | 122.36 | 394% | 105.21 | 326% | 303% | 141% |
| 1973 | 135.43 | 436% | 114.69 | 356% | 318% | 150% |
| 1974 | 154.56 | 497% | 128.05 | 397% | 352% | 167% |

### TABLE 2b: INDICES OF ACUTE HOSPITAL UTILIZATION

| Year | Admissions per 1000 persons | Average Length of Stay (days) | Patient Days per 1000 persons |
|---|---|---|---|
| 1960 | 127.1 | 7.60 | 966 |
| 1965 | 136.2 | 7.77 | 1058 |
| 1970 | 142.8 | 8.26 | 1179 |
| 1971 | 145.5 | 8.06 | 1172 |
| 1972 | 147.4 | 7.90 | 1164 |
| 1973 | 151.0 | 7.82 | 1181 |
| 1974 | 155.5 | 7.77 | 1207 |

Sources: See next page

TABLE 2c: INDICES OF ACUTE HOSPITAL SERVICE INTENSITY

| Year | Labor: Employees per patient day | Capital: Hosp. Assets per adjusted patient day |
|---|---|---|
| 1960 | 2.26 | $ 62 |
| 1965 | 2.46 | 72 |
| 1970 | 2.92 | 101 |
| 1971 | 3.01 | 110 |
| 1972 | 3.10 | 124 |
| 1973 | 3.15 | 134 |
| 1974 | N/A | 145 |

TABLE 2d: INDICES OF ACUTE HOSPITAL CAPACITY

| Year | Beds per 1000 persons | Hosp. Employees per 1000 persons | Hospital Assets per 1000 persons | Occupancy |
|---|---|---|---|---|
| 1960 | 3.53 | 6.0 | $ 65 | 74.7 |
| 1965 | 3.81 | 7.1 | 84 | 76.0 |
| 1970 | 4.14 | 9.4 | 130 | 78.0 |
| 1971 | 4.19 | 9.7 | 143 | 76.7 |
| 1972 | 4.23 | 9.9 | 161 | 75.2 |
| 1973 | 4.29 | 10.2 | 179 | 75.4 |
| 1974 | 4.39 | N/A | 197 | 75.3 |

Sources: Acute hospital expenditures, cost per day, admissions, patient days, length of stay, assets, beds, and occupancy, from non-federal short term hospital data in Hospitals J.A.H.A. Guide Issue (Aug. 1975).
U.S. population, from Statistical Abstracts of the U.S. (1975).
Hospital employees per patient day, from "Health in the U.S." (HEW 1976).
Hospital and consumer price index, from Bureau of Labor Statistics.

Intensity (Table 2c):

-- The increase in cost per day reflects a substantial increase in intensity (e.g. in the labor and capital inputs expended in each patient day). Hospital employees per patient day have increased 50% since 1960, and capital assets required for each patient day have more than doubled.

Capacity (Table 2d):

-- The number of beds set up and staffed for use, per 1000 persons, has increased 25% since 1960. But this tells only a small part of the story: hospital employees per 1000 persons have increased 70%, and plant and equipment assets per 1000 persons have tripled, indicating a much more substantial increase in capacity. Thus beds, labor and assets must all be considered in assessing hospital capacity.

-- The steady increase in capacity, despite falling occupancy rates since 1970, suggests an over-building of capacity. Occupancy has declined from a high of 78.8% in 1969 to 75.3% in 1974.

-- The ratio of annual operating expense to capital assets has increased from 48% in 1969 to 78% in 1974. In other words, the "sunk cost" put into building capacity, while large, is becoming less and less important relative to the recurring operating costs it generates. In two years a hospital will generate more operating expense than it cost to build and equip.

-- The national averages in Table 2 conceal marked variations in hospital capacity from state to state and even county to county (see Chapter I, Table 7 and Chapter IV, Table 1). While some areas have less than 3.5 hospital beds per 1000 population, other areas have over 6 beds per 1000. While variations in cost and use correlate closely with variations in capacity, variations in health status do not (see Section B below).

The runaway cost of health care is not being tolerated well by society and particularly by government. Clearly a rich country like the United States will be willing to spend a greater fraction of its GNP for health care than a poor country. How much it is willing to spend is a subjective rather than objective matter, and will depend in part on society's perception of what it is getting for its money. The considerable and increasing intervention in the health care system by government in the last five years suggests that society, through its elected representatives, is expressing its concern that it is spending more than it wants to. Health care is the largest industry inflating so badly, and exerts a significant impact on the rest of the economy. For example, automakers complain they now pay more for health care than for steel. And health care is the third largest and fastest growing uncontrollable expense in the federal budget, conflicting with resource needs for other pressing national priorities; this problem is even more critical in the states. Thus the issue is now one of priorities, not just health care. Moreover, there is no reason to expect medical cost escalation to moderate. It is deeply rooted in the present nature of the health care system, and will be altered only when the structure and incentives in the system are significantly altered (see Chapter II, Section B and III, A). It seems inevitable that government will eventually be compelled to do everything and anything it has to do to moderate medical cost escalation to acceptable levels. The effort to contain cost leads naturally to the question of what we are purchasing for all this expenditure, a question to which we now turn.

## B. The Relationship of Health Care to Health

There is a substantial and growing body of empirical evidence that, at current levels of use, the marginal impact of medical care on health is at most small, especially when compared to the influence of such factors as lifestyle, education, nutrition and environment. This does not mean that medical care is unimportant to health. Certain basic medical services, like immunizations and setting broken bones, have a high impact on health. But as additional increments of medical services are added, their successive impacts on health levels declines until a point is reached where large increments in medical use have a negligible impact on health. At current levels of use we appear to be beyond this point of diminishing marginal returns.

The evidence for this is of four kinds:

- *Studies of health indices* (such as age-specific death, disease and disability rates) over time and across and within countries and regions. These studies show health levels are only poorly correlated with the use and supply of medical care (e.g. physician visits, hospital days, number of physicians, number of hospital beds) and much more strongly correlated with lifestyle and cultural behaviors and environmental factors.

- *Studies of medical care use and supply* across comparable populations. These studies show large differences in use and supply among even carefully matched populations. While such studies do not directly measure health levels (or control for them only indirectly), the differences seem far larger than any known differences in the study populations can account for. Moreover, use and supply are found highly correlated, and increases in supply appear to cause increases in use.

- *Clinical studies of the efficacy of medical care.* Where available, these studies show that many of the things that physicians and hospitals do are of questionable or no health benefit, particularly in relation to their cost. The majority of medical procedures are based on "clinical impression" and convention, and remain unevaluated by rigorous scientific clinical trials; this does not mean they are of no value, it means only that their value is unknown.

-- *Studies of the efficiency of medical care.* These studies show a substantial amount of inefficient use and supply: use of the hospital when ambulatory treatment would suffice, excessive length of stay, excessive idle hospital beds and equipment, are some examples.

Unfortunately these studies are scattered throughout the research literature, and no single scholarly review of this literature is available. It is not our purpose here to compile such a review, but because these results are crucial to the subsequent development of this study, we shall in this and the remaining sections of this chapter provide sufficient citations of the research to document pertinent findings and conclusions, particularly in regard to acute hospital use and capacity. From the citations provided, the interested reader should be able to pursue the literature more thoroughly.

Finding 1: At current levels of use, the large observed variations in the use and supply of medical care have at most a small impact on measurable health indices.

A partial review of this literature is given by Fuchs (ref 1), who also reaches the above conclusion. To illustrate the finding, we will cite three longitudinal studies (comparisons of the same group over time) and two cross-sectional studies (comparisons across groups at a single point in time). Benham and Benham (ref 2) compared changes in self-reported health status, symptoms, and disability days between 1963 and 1970 for population groups of the same age and educational attainment; despite a considerable increase in (non-obstetric) hospital use, no correlation was found between this increase and these health indices when other factors were held constant. McDermott et al (ref 3) attempted to change health status on an Indian reservation by saturating the reservation with the best modern medical care; the experiment was on the whole unsuccessful. Hubbard (ref 4) has pointed out that "during World War II there was a massive exodus of physicians from (civilian practice) in 1942 and a sudden return at the end of the war; these shifts did not affect statistical measures of trends in general health." In England, Logan et al (ref 5) found no consistent relationship between mortality rates and hospital admission rates across a number of regions. In the U.S., Auster et al (ref 6) found at most a small, statistically unsturdy relationship between mortality rates and per capita medical expenditures across states when other factors were taken into account.

Some caveats should be placed on this finding. First, the finding is based on (the not inconsiderable) studies to date. More research is needed, which might modify the above finding. On the other hand, while the existing studies vary in approach and methodological strength, we do not know of a single study which has so far reached a contrary finding. And this finding is consistent with other research evidence cited below. Second, new discoveries in medicine might change the above finding; of course, such discoveries might equally worsen the relationship between health and medical care costs rather than improve it. Third, we do not imply that medical care has no impact on health. Clearly, basic adequate medical care -- immunizations, setting broken bones, etc. -- plays an important and proven role in improving health levels. However, current levels of medical care use are by and large so far above the minimum levels expected to affect health, that the marginal effect upon health of variations in current use rates appears negligible. In other words, at current levels of use we are well beyond the point of diminishing marginal returns. Fourth, the fact that current levels of medical care use are more than adequate for at least 95% of the population, should not obscure the fact that concealed in these averages may be small pockets of underserved persons, largely low income, whose health might benefit from additional medical care (ref 7); it should also not obscure the fact that a larger fraction of the population, whose overall levels of medical care are more than adequate, might experience somewhat better health results were the mix and organization of medical care services more optimal. Which, and how, procedures get done appears more important than how much gets done. The research simply suggests that for the overwhelming majority of the population, including the poor, current use rates appear far more than adequate to do all that medical care can do for health if done right (see Table 3), so that gross variations observed in medical care usage have little marginal impact on health. Finally, health care has a "caring" value beyond its health value. And equal access to health care is a symbol of society's concern for all its citizens. Nevertheless, we doubt that the personal caring quality of medical care is reflected by increases in medical cost, and indeed, the growth of highly technological medical complexes may be an impediment to the caring function.

TABLE 3. MEDICAL CARE USE BY AGE AND INCOME (1964 and 1974)

| Age | Physician Visits per Person | | Hospital Discharges per 1000 Persons | |
|---|---|---|---|---|
| | 1964 | 1974 | 1964 | 1974 |
| 0-16 | | | | |
| poor* | 2.3 | 3.6 | 58 | 85 |
| non-poor | 4.0 | 4.3 | 70 | 64 |
| 17-44 | | | | |
| poor | 4.1 | 5.5 | 181 | 198 |
| non-poor | 4.7 | 4.7 | 161 | 141 |
| 45-64 | | | | |
| poor | 5.1 | 6.3 | 146 | 227 |
| non-poor | 5.1 | 5.4 | 148 | 161 |
| 65 or more | | | | |
| poor | 6.0 | 6.4 | 179 | 281 |
| non-poor | 7.3 | 7.3 | 202 | 220 |

* Defined as the lowest 20% of the population with respect to family income.

Source: Status (U.S. Dept. of Commerce, Aug. 1976) p 27-8

We also underscore that these research results in no way suggest malice or conspiracy on the part of the great majority of physicians and hospitals to over-provide the public with unnecessary medical care. On the contrary, the high public esteem for physicians and hospitals suggest they are performing a highly valued service. Nevertheless providers of care must recognize that the growing cost of care is becoming unacceptably burdensome, particularly at a time when the nation aspires to make adequate care available to all. The public and the government are sending loud signals that it is time to tighten ship. The laxness once tolerated in the system is unlikely to continue, even if the changes necessary may prove a little uncomfortable to providers and the public alike.

The above finding indicates that the continuing escalation in health care costs, at least at the current high rate, may represent poor value for money and an excessive and unnecessary diversion of national resources. We now turn to the role that excess hospital capacity may play in the growth, and possibly in the eventual control, of health care costs.

## C. Defining Excess Hospital Capacity

In order to define the notion of excess hospital capacity, the finding above leads us to introduce two notions of efficiency. The first is "service-efficiency," in which a particular service, say a tonsillectomy, is accomplished satisfactorily with a minimum expenditure of resources. The second is "health-efficiency" in which a population of patients are moved to and maintained at an optimal state of health with a minimum expenditure of resources. Health efficiency would be concerned not just with how economically a tonsillectomy was rendered, but whether it should have been done at all in lieu of less intense treatment such as bed rest and medication at home.

In light of the weak marginal impact of health care on health, health-efficiency seems to us the more pertinent concept to monitor and assess. It is a broader measure than service-efficiency. It not only reflects whether services are being produced efficiently, it also indicates whether the quantity and "mix" of services* are being used efficiently. Thus indices of service-efficiency can be misleading from the standpoint of health-efficiency. For example, if less severe cases are unnecessarily admitted to the hospital, indices like cost per admission and length of stay may fall even though overall hospital costs to the community are increased. Productivity should be measured in health per dollar, not services per dollar.

Thus the true inflation in the cost of health produced by health care is not indicated by service price indices such as the medical price index and the hospital price index. The true inflation is measured by the rise in per capita health care costs unaccompanied by improvements in health attributable to health care. In this study we shall therefore use as the final reference measure of effective cost containment, moderation in the growth of per capita health care expenditures.* A reasonable policy objective would be to contain per capita health expenditures with at least no deterioration in current health levels; in other words, to improve health-efficiency.**

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* By "mix" of services we mean the relative proportions of high and low intensity procedures.

We may now broadly define excess hospital capacity as any hospital capacity which contributes unnecessarily to per capita health care expenditures if alternative, less expensive medical (or non-medical) means exist to achieve equal levels of health. To sharpen our focus, the two definitions of efficiency above allow us to usefully distinguish two types of excess hospital capacity:

(1) Under-utilized hospital capacity is capacity built, equipped and/or staffed to handle a volume of services in excess of its actual utilization. Thus this type of excess capacity represents "service-inefficiency"; if such capacity were more efficiently utilized, each service would be less costly.

(2) Excessively-utilized hospital capacity is capacity used to provide inpatient services when equally medically acceptable*** but less intensive alternative services, either on an inpatient or ambulatory basis, would have sufficed. This type of excess capacity is thus based on the broader "health efficiency" concept.

Since medical experts differ sharply on what constitutes equally acceptable medical styles of practice, the measurement of excessively utilized capacity will likely be fraught with some degree of controversy. Two examples can illustrate the extremes. The first example is tonsillectomies. Most university pediatric faculty now believe that home bed rest with medication is medically preferable to tonsillectomy for the treatment of tonsillitis in children. Yet tonsillectomy remains the most common surgical procedure in the United States. Apparently many practicing physicians have not learned or are unconvinced of present medical school opinion on this procedure. If we assume the medical school view, then home bed rest is at least as acceptable medically as tonsillectomy; but these two treatments are not equally financially acceptable. The low intensity treatment is far more "health-efficient." The tonsillectomy rate could be cut by perhaps 80%, and the professional manpower, operating suites and beds now being utilized for tonsillectomies can be regarded as excessively-utilized capacity.

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* Because of our interest in acute hospital costs, we shall often use per capita acute hospital expenditures as a narrower proxy. This index is more readily available on a community basis. Clearly, however, this proxy index would be inappropriate for any hospital cost controls which decreased per capita hospital expenditures but led to offsetting rises in other health care expenditures (including health care regulation expenses).

** The American people and their providers may regard their hospitals as having utility beyond the simple production of health, and thus as a matter of taste find this objective too limited. For a fuller discussion, see Section H,1 below.

*** By medically acceptable we mean that good health outcomes are achieved. This is to be distinguished from acceptability to physicians, which may or may not coincide with medical acceptability in our terms.

A much more controversial example is obstetrical care. In the United States almost all babies are delivered in the hospital, commonly by an obstetrician. In the Netherlands, only high risk babies are delivered in the hospital; low risk babies -- some 60% of all births -- are delivered at home, commonly by an organized midwife service under physician supervision. Yet the Dutch consistently equal or exceed the U.S. on infant and maternal survival rates (ref 8). These outcome data suggest that appropriate supervised pregnancy care and home delivery by a midwife may be at least as medically acceptable as hospital delivery. (Other data suggest that early and continued pregnancy care is the most critical factor in successful delivery (ref 9). If some of the resources now tied up in hospital delivery could be freed for early continuing pregnancy care, United States infant mortality might fall.) While international comparisons may be risky, perhaps up to 60% of U.S. hospital obstetrical care may represent excessively-utilized capacity. Yet it is doubtful that U.S. obstetricians are ready to concede this; they are certainly not clamoring for clinical trials. Moreover, the American people are now conditioned to the belief that babies should be delivered in hospitals. Despite the possible "health-efficient" superiority of appropriate home delivery, the American people may prefer to pay more to satisfy what may be simply cultural and technological preferences (or prejudices).

A final difficulty in the definition and measurement of excess hospital capacity rests in the definition and measurement of hospital capacity itself. If we wish to look at manipulating excess hospital capacity as a means to reduce per capita health care costs, then we must not only define capacity in terms of beds, e.g. the capability to produce patient days, but also in terms of employees, capital assets, and service programs and equipment, e.g. the capability to produce more "intense," costly patient days. Clearly, even if its bed capacity were held fixed, a hospital could produce higher per capita hospital expenses if its capacity to produce more intensive patient days is permitted to increase. We will therefore speak also of intensity-capacity as well as bed-capacity.

### Finding 2: Bed capacity is difficult to measure precisely

While capacity is fairly easy to define conceptually, it is difficult to measure precisely. The "simple" question of how many beds an institution has turns out to have a somewhat indefinite answer. As one expert we interviewed noted, observed practices in some hospitals permit occupancies over 100% of rated capacity on an annual basis; hospitals are known to vary bed capacity at will by having beds in storage available for increased occupancy, or "moth-balled" if they wish to escape rated occupancy penalties. Thus the number of beds actually available for use may be greater or less than licensed bed capacity.

### Finding 3: The capacity of specific service facilities and programs is even more uncertain, because different kinds of beds are fungible (substitutable).

One measure of the intensity-capacity of a hospital is the number and complexity of service facilities it provides -- intensive care units, cobalt units, CAT scanners, etc. -- and their individual capacities. But, as several experts noted, only bassinets can't be substituted for other types of beds. Gynecology cases can be put in obstetrical beds, young adults can be put in pediatric beds, and with a couple days notice a general medical-surgical ward can be set up as an intensive care unit. Many hospitals have written policies governing such procedures, and the safety of these practices has been documented (ref 10). Therefore, such indices as hospital employees, plant assets and equipment assets per 1000 population may prove as useful in assessing capacity as bed and service facility counts.

Clearly, more precise measures of hospital capacity are needed. Per capita hospital use and expenditures are themselves very indicative of hospital capacity, for capacity is really the capacity to generate services and costs. The New York State Department of Health has under development a very thought-provoking measure of capacity based on the total revenue-generating power of a hospital (ref 11). In essence, capacity is measured by a "capitalization" value, computed by discounting future annual revenues to their present value. While this "capitalization," per 1000 population, indicates under-utilized capacity only indirectly, it may be an excellent measure of intensity-capacity.

From these definitions and observations, it is clear that the measurement of excess hospital capacity, both under-utilized and particularly excessively-utilized, is uncertain and legitimately controversial. There will also be more subjective debate arising from the custom and vested interest of communities, physicians, and hospitals in present capacity and utilization patterns; it will be important to keep the subjective and objective aspects of the debate separate. Within these uncertainties we shall report findings below that attempt to give some feeling for the amount of excess hospital capacity of both types. We shall begin by exploring the relationship between capacity and utilization.

## D. The Relationship Between Hospital Capacity and Hospital Use

Traditionally it was presumed that "patients beget beds." That is, as a population used more inpatient services, hospital capacity would presumably be increased in response. This belief was challenged by Roemer and Shain in 1959 (ref 12). Observing a high correlation between beds and patient days but that occupancy was just as high in communities with high bed rates as in communities with low, Roemer and Shain suggested that through some mechanism "beds beget patients." They concluded that beds will be occupied at approximately the same rate at any known level of beds per 1000 persons. Fifteen years of subsequent research have modified and clarified this original statement, but have consistently confirmed the essential contention, now called the "Roemer effect": the more beds there are, the more use will be made of them. Succinct reviews of the research literature are included in recent articles by May (ref 13) and Pauly (ref 14) and earlier by Klarman* (ref 15). The basic findings are as follows:

Finding 4: All studies are consistent with the hypothesis that, holding all other factors constant, an increase in hospital beds of itself appears independently to push hospital utilization upward. The estimated magnitude of the effect varies somewhat among studies; roundly, a 10% increase in beds per 1000 persons is associated with a 4% rise in patient days per 1000 persons.

There appears to be little dispute about the extremely high correlation between beds and use; utilization rates are higher where beds are more plentiful. The main uncertainty is just how strong is the causality in each direction in the relationship. The most elaborate studies (ref 13, 16,17), holding constant a huge variety of presumed demand factors, find that utilization still increases with increased beds, and therefore conclude that an increase in beds can of itself independently cause an increase in use (as well as vice versa). the magnitude of the effect varies among studies. The 4% effect on use stated in our finding is derived from May (ref 13) using national data, and may be conservative. Chiswick (ref 16) using only metropolitan area data (SMSAs) finds a stronger Roemer effect, of 5% or more, depending on the equation fitted.

There is also a relationship between physicians and hospital use (reviewed in ref 35). The strongest correlation is found between hospital use and cost rates and physician specialists per capita. The only study (ref 16) which separated physicians into surgical and non-surgical specialties found patient days to be correlated significantly with surgeons but uncorrelated with non-surgeons; to our knowledge, this finding has not been tested by others as yet.

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* Klarman was one of the earliest researchers to advocate control of hospital capacity as an instrument of public policy. He pointed out that no existing research indicated capacity reduction would harm health, and that if later research contravened this point the policy could quickly be reversed. Another advocate has been Rogatz, who has sketched out a series of actions to reduce hospital capacity (ref 73).

Finding 5: While the economic literature has not yet settled on the exact mechanism by which beds cause utilization, there is little doubt that physicians and hospital personnel can directly and indirectly influence utilization.

The medical experts interviewed for this study were virtually unanimous in agreeing that hospitals and their medical staffs could boost utilization in a great variety of ways. The basic control over hospital admissions and length of stay is exercised by physicians. Because medicine is as much art as science, the criteria for admission, discharge, and medical procedures are highly ambiguous. Thus physicians can usually find medically legitimate ways to increase admissions and procedures and to delay discharges, if they are looking for them. O'Donnell has discussed some of these mechanisms (ref 18). For example, physicians are usually sympathetic to the financial condition of hospitals where they practice. The astute hospital administrator keeps them very aware of the hospital's financial state, and of what this can mean for acquiring various service facilities and equipment the physician staff may be interested in. The hospital administrator can also influence in some degree the type of physician recruited to the medical staff, and he is conscious that, say, a surgeon produces more patient volume than a pediatrician. The hospital can make sure that its emergency and outpatient departments, where admissions occur particularly easily, are attractive to patients and physicians for non-emergency care, especially on nights and weekends when physicians prefer not to offer office coverage. The less zealous hospital administrator can, by management inattention, delay expediting patient stays in a variety of ways, such as tolerating delays in the scheduling and return of lab tests; and if his physicians are not especially interested in utilization review, his management systems need not be particularly diligent in pushing them to it. Fuchs (ref 1) has noted that the hospital administrator can also manipulate the professional jealousies of the medical staff. For example, he can suggest to a department chief whose wards are poorly occupied that perhaps his beds and wards should be reduced; this is often sufficient to prod department physicians into raising utilization.

Caveats: Some caveats should be made on the conditions under which the above two findings were made. First, all the studies were made on average populations where considerable public or private insurance was in force. It is doubtful that the Roemer effect would be nearly as strong in a population with lower incomes and little insurance or public subsidies. Second, the modern statement of the Roemer effect does not claim that hospitals can inevitably fill their beds, no matter how many. This is clearly contradicted by the steadily falling occupancies observed since the late 1960s (which some attribute at least in part to utilization review controls). The Roemer effect simply states that, other things being equal, an increase in bed supply will produce an increase in utilization. A change in other conditions -- for example, increased unemployment, utilization controls, etc. -- could help hold utilization to less than it would otherwise be if just beds were increased. Finally, the studies above were all made under conditions of increasing beds. While suggestive, they do not directly prove that a "reverse Roemer effect" holds, i.e. that a decrease in bed capacity will produce a decrease in utilization. We will examine the evidence for the existence of a reverse Roemer effect later below.

## E. The Amount of Excess Under-utilized Hospital Capacity

We report here findings estimating the amount of "under-utilized" hospital capacity in the United States. To arrive at such estimates we assume, for the moment, current levels of utilization as a given.* Then, in essence, we apply an "ideal" occupancy factor to the average daily census to obtain the ideal number of beds required. Any actual beds in excess of this ideal number can then be considered under-utilized. We begin with some considerations to give a feel for the uncertainty in these estimates. As long as we are interested in a rough estimate rather than a precise number, the uncertainty is not a real problem.

As noted in Section C, hospital capacity itself is uncertain because operational beds may differ from licensed bed complements. Beyond this, under-utilized bed capacity is ambiguous because ideal occupancy is a matter of judgment and policy. Hospital use fluctuates from day to day. If it is desired to have fewer occasions when a hospital is full and emergency patients must be turned away to other hospitals -- which might be the case in isolated rural hospitals -- then a larger "cushion" of beds must be maintained in addition to those needed for the average daily census. Ideal occupancy will thus be lower, and service costs will be higher. If sending patients to other hospitals can be tolerated more frequently -- which could be the case in multi-hospital urban areas -- then only a small "cushion" of additional beds is required. Ideal occupancy will be higher and service costs lower.

The ideal occupancy required to limit patient turn-aways to any specified small percentage of admissions can be calculated statistically (ref 19) and depends on the average daily census. The larger the average daily census, the smaller the fluctuations about the average, and thus the greater the ideal occupancy can be. (Table 4 illustrates this effect). Some experts feel that ideal occupancy can only be calculated taking into account the size of each individual service program of a hospital; given the fungibility of beds (see Finding 3) this seems an unnecessary complication in most instances and produces excessively low and costly ideal occupancies. Patient turn-away at current occupancy rates is virtually negligible, and

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* This assumption is later relaxed when discussing excessively-utilized capacity.

TABLE 4. IDEAL OCCUPANCIES DETERMINED BY PATIENT TURN-AWAY STANDARDS

| Average Daily Census | Desired Maximum Probability of any Patient Turnaway to Another Hospital | Beds Required | Resulting "Ideal Occupancy" |
|---|---|---|---|
| 50 | 1 in 200 | 70 | 71.4% |
| | 1 in 1000 | 74 | 67.6% |
| 250 | 1 in 200 | 292 | 85.6% |
| | 1 in 1000 | 301 | 83.0% |
| 500 | 1 in 200 | 559 | 89.4% |
| | 1 in 1000 | 571 | 87.6% |

Note: The probability of patient turn-away can be interpreted as meaning that on one day in 200 (or 1000) a patient would have to be sent to another hospital, or wait, because the first hospital was full.

Note: If the policymaker is willing to tolerate non-emergency patients queuing (waiting) for a day or so, the above ideal occupancies could be raised much higher, see ref 19.

Source: reference 20

would remain so even if national average occupancy were raised from its present value of 75% to 81% of existing set up beds (ref 20). Even higher occupancies of 85% or more would create little problem, still allowing emergency and urgent cases to be admitted immediately and producing only short delays for non-urgent cases.

Finding 6: The amount of under-utilized acute bed capacity is somewhat uncertain, but is on the order of 5-10% of licensed beds nationally.

This finding is based on two sources. The first source is Hill-Burton data (ref 21). Hill-Burton defines bed capacity in terms of "bed space assigned exclusively for inpatient care, including bed space originally designed or remodeled for inpatient beds even though temporarily not used for such purposes," and includes any uncompleted bed space scheduled or under construction as well as existing bed space. Hill-Burton projects bed requirements five years ahead by (1) projecting population five years ahead, (2) applying current per capita hospital experience to obtain the expected utilization, and (3) then applying an ideal occupancy factor to obtain the beds required. Since 1971 Hill-Burton has set ideal occupancy at an average of 85%; previously the ideal was set at 80%. This raising of ideal occupancy has resulted in a decrease in projected bed requirements from a high of 917,228 beds in 1973 to 881,179 beds in 1975.

By comparing projected beds required with the 922,231 existing beds, we obtain Hill-Burton's estimate of net excess beds: 41,052 under-utilized beds. This does not tell the whole story, for the bed supply is poorly distributed and some areas presently have shortages of beds. Hill-Burton estimates 42,165 beds need to be added in these shortage areas. This means that the other areas have a gross surplus amounting to 83,217 under-utilized beds. Similarly Hill-Burton projects the net number of excess acute hospitals at 709 out of the existing supply of 6426 hospitals, and the gross excess, allowing for shortage areas that need new hospitals, is 775. (See Table 5a)

TABLE 5a. HILL-BURTON ESTIMATES OF EXCESS UNDER-UTILIZED HOSPITALS AND BEDS

| | Acute Hospitals | Acute Beds |
|---|---|---|
| A. Existing: | 6426 | 922,231 |
| B. Needed in five years (@ 85% occupancy) | 5717 | 881,179 |
| C. Net Excess (A-B) | 709 | 41,052 |
| D. Need to be added in shortage areas | 66 | 42,165 |
| E. Gross Excess in non-shortages areas (E + D) | 775 | 83,217 |

Source: ref 21, table 1

These Hill-Burton estimates of excess beds would be even larger if current utilization levels were used rather than the utilization of the projected population five years ahead. Thus according to Hill-Burton the number of currently under-utilized beds is at least 83,217 beds or 9% of the existing stock. If some of these excess beds could be geographically redistributed to meet the need of shortage areas, the nation would still have a surplus of 5% under-utilized beds.

A second independent source estimating excess under-utilized beds comes from an InterStudy report by Bennett and Sattler (ref 20). They assigned an ideal occupancy to hospitals by size. These ideal occupancies ranged from 58% for hospitals of less than 25 beds to 88% for hospitals over 500 beds, and are more conservative than the 85% average occupancy assigned by Hill-Burton. Applying these ideal occupancies to the actual patient census reported by the American Hospital Association (AHA) in each size class of hospitals, they then calculated the ideal number of beds required in each class and compared it with the actual beds as reported by the AHA. The difference between actual beds and ideal beds then represents under-utilized excess beds. With these conservative ideal occupancies, they found a total of 68,887 under-utilized beds, or 7.5% of the existing bed stock. (See Table 5b)

TABLE 5b. INTERSTUDY ESTIMATES OF EXCESS UNDER-UTILIZED ACUTE HOSPITAL BEDS

| Hospital Size Class | 1974 Existing Beds | 1975 Bed Need at Ideal Occupancy | 1975 Excess Beds |
|---|---|---|---|
| 0 - 49 beds | 49,807 | 46,479 | 3,328 |
| 50 - 199 beds | 293,364 | 270,469 | 22,895 |
| 200 - 399 beds | 286,663 | 270,695 | 15,968 |
| 400 + beds | 285,953 | 259,257 | 26,696 |
| TOTAL | 915,787 | 846,900 | 68,887 |

Source: ref 20

Finding 7: The amount of excess under-utilized "high intensity" capacity is unknown, but may be substantial.

There is evidence that at least some high intensity capacity is under-utilized both from a service efficiency and medical safety standpoint. We could find no comprehensive review providing occupancy or patient volume criteria for various high intensity services, such as operating rooms, coronary care units, cardiac surgery units, etc. (Such a review would have obvious utility to health planners.) Time did not allow a search of the literature for each separate service program. To obtain an idea, we did examine criteria and standards for two typical types of service facilities: cardiac surgery and coronary care units.

Scannell et al (ref 22) state as a criterion that the workload of a cardiac surgery unit must be sufficient "to allow physicians and surgeons...to maintain clinical skills and research interest," and suggest as a minimum standard "four to six cardiac operations with extracorporeal circulation weekly," or from 200 to 300 procedures annually. This is an increase from a previous judgment of 100 procedures yearly. (We do not know of formal clinical trial results in support of either expert opinion.*) In 1969 only 16% of the 480 hospitals with cardiac surgery units were performing more than 100 procedures yearly, and only 7% were performing more than 200 procedures. The Scannell group concluded that "many facilities performing cardiac surgery are underutilized to a degree that raises serious questions about their value." Indeed, by their criteria, 84% to 93% of cardiac surgery units were under-utilized.

This is consistent with the findings of Glasgow et al (ref 23), who found the capacity of cardiac surgery facilities present in Connecticut in 1970 capable of handling 1000 operations annually, whereas the most liberal estimate of need was for only 624 operations annually by 1980. Existing cardiac diagnostic capacity was estimated sufficient for 1500 patients annually, whereas the load was only 750 patients annually.

Regarding coronary care units, Petersen et al (ref 24) estimated that all anticipated cases of heart attack in their regional medical program area would occupy only 70% of capacity in 1969, and noted that capacity had increased another 27% by 1971. (They also reported half the patients in these coronary care unit beds did not have heart attacks and were a very low risk group, but this belongs more properly under examples of excessively-utilized capacity below).

The amount of other under-utilized high intensity service units cannot be inferred from these examples, but they do raise serious questions. Clearly, further research is needed on under-utilized high intensity service facilities.

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* One experienced cardiac surgeon interviewed state that, on the basis of complication rates and case fatality rates that he had personally reviewed, institutions performing less than 100 procedures per year could run case fatality rates as high as 25%, whereas institutions with more than 300 procedures per year could typically hold case fatalities to less than 5%, for cases of comparable complexity.

## F. The Amount of Excess Excessively-utilized Hospital Capacity

The above estimates of under-utilized capacity accept current utilization rates as a given. On the other hand, there is now considerable evidence that current hospital utilization rates are excessive from a "health efficiency" standpoint (see Section B). If so, then considerably more excess capacity exists in addition to that estimated above. We review this evidence here and show its impact on excess hospital capacity.

### Finding 8: Variations in hospital utilization among comparable populations appear far greater than can be accounted for by any known health risks.

The evidence for this finding comes from two types of research, comparisons between matched HMO and fee-for-service populations, and comparisons between fee-for-service populations in different areas.

The HMO research may be found summarized in two review articles (ref 25,26). The weight of the evidence is that among comparable populations, matched for age, sex and other factors, HMOs use 30-50% less hospital days and half as many hospital beds as do fee-for-service providers (see Table 6). The few comparative studies of health outcomes in matched populations confirm the less rigorous, impressionistic evidence that HMO and fee-for-service care are equally effective. Utilization rates among mature HMOs around the nation vary rather little, ranging between 400 and 500 patient days per 1000 enrollees (including out of plan use), in contrast with the great variations observed in comparable population groups served by fee-for-service providers. It should be noted that HMOs serve largely employed populations and have somewhat fewer elderly, so HMO utilization rates cannot be carried over directly to the general population. Nevertheless, if an overly generous 50% safety factor is thrown in to adjust for age and employment status,* the HMO evidence suggests, as a reasonable lower limit, that the U.S. population might be served by as few as 600-800 patient days per 1000 population without detriment to health, were the fee-for-service system as tightly organized as HMOs. At 85% average occupancy, 600 patient days would require 2 beds per 1000 population, and 800 days would require 2.6 beds.

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* This safety factor is considered generous because studies (ref 27) show representative low income families in mature HMOs utilize services at the same rates as middle class enrollees. The aged use services at roughly three times the rate of the non-elderly. Mature HMOs run about 5% elderly enrollees. If their elderly enrollees were increased to 10% of enrollment, comparable to the national rate, utilization should rise 15%. The disabled and other high risk persons also are under-represented in HMOs; if we assume a typical population has 3% such high risk persons, and assume their use is three times greater than average, we can expect a rise of 10% in hospital days. Together these adjustments total 25%. Therefore a 50% upward adjustment should be very safe.

TABLE 6. COMPARISON OF UTILIZATION RATES PER 1000 POPULATION: HMO AND U.S. AVERAGE

| Sex & Age | Admissions | | Length of Stay(days) | | Patient Days | |
|---|---|---|---|---|---|---|
| | U.S. | HMO | U.S. | HMO | U.S. | HMO |
| Male | | | | | | |
| 0-14 | 81.6 | 83.5 | 4.6 | 3.9 | 373.1 | 322.1 |
| 15-44 | 91.0 | 32.0 | 6.7 | 6.4 | 611.5 | 204.8 |
| 45-64 | 173.8 | 91.1 | 9.4 | 8.0 | 1633.1 | 731.3 |
| 65+ | 360.8 | 216.7 | 11.8 | 9.3 | 4248.7 | 2007.9 |
| Female | | | | | | |
| 0-14 | 65.3 | 60.0 | 4.3 | 4.6 | 282.8 | 278.8 |
| 15-44 | 216.6 | 108.0 | 5.3 | 4.1 | 1141.8 | 411.7 |
| 45-64 | 179.9 | 87.6 | 9.1 | 7.7 | 1645.7 | 671.9 |
| 65+ | 312.3 | 155.8 | 12.6 | 10.2 | 3944.7 | 1584.1 |

Source: U.S. rates from National Center for Health Statistics (1972)
HMO rates from a large, mature HMO (June 1973 - May 1974)

The second source of evidence is from international, regional and small-area variations in per capita utilization rates. This research literature is cited in recent articles by Wennberg et al (ref 28). The British experience is summarized in a review article by Carstairs and Heasman (ref 29). Internationally, for example, per capita surgery rates in England are half those of the U.S., yet the British show slightly better infant survival and longevity rates. Within the U.S., per capita hospital admission and length of stay rates for the same procedures vary up to 50% among regions; for example, length of stay for uncomplicated births averages five days in the Northeast and three days in the West. Regional variations in overall per capita admissions, patient days, length of stay and expense show substantial differences, even when insurance benefits are held constant, as in Medicare (see Table 7a); for example the Northeast has the fewest discharges but the longest length of stay, and substantially higher per capita costs.

The most compelling evidence is the great variations in per capita utilization even among neighboring small areas. The most detailed studies have been carried out in Vermont and Maine (and confirm the results of less rigorous studies of Blue Cross and Medicare data elsewhere in the country) that neighboring areas have much larger variations in per capita hospital use than can be accounted for by any known health risk factors (see Table 7b). For example, Vermont

TABLE 7a. REGIONAL VARIATIONS IN PER CAPITA HOSPITAL USE AND EXPENSE UNDER MEDICARE.

| Year | All Areas | North-east | North Central | South | West |
|---|---|---|---|---|---|
| | Number of discharges per 1,000 enrollees | | | | |
| 1967 | 259 | 217 | 277 | 283 | 268 |
| 1973 | 302 | 264 | 321 | 328 | 303 |
| Rank, 1967 and 1973 | -- | 4 | 2 | 1 | 3 |
| | Mean length of stay (in days) | | | | |
| 1967 | 13.8 | 16.1 | 14.6 | 12.3 | 11.8 |
| 1973 | 11.8 | 14.3 | 12.2 | 10.8 | 9.5 |
| Rank, 1967 and 1973 | -- | 1 | 2 | 3 | 4 |
| | Days of care per 1,000 enrollees | | | | |
| 1967 | 3,575 | 3,501 | 4,052 | 3,474 | 3,151 |
| 1973 | 3,556 | 3,779 | 3,911 | 3,543 | 2,867 |
| Rank, 1967 and 1973 | -- | 2 | 1 | 3 | 4 |
| | Mean charge per day | | | | |
| 1967 | $49 | $55 | $45 | $43 | $60 |
| 1973 | 104 | 119 | 96 | 90 | 129 |
| Rank, 1967 and 1973 | -- | 2 | 3 | 4 | 1 |
| | Mean charge per enrollee | | | | |
| 1967 | $175 | $193 | $182 | $149 | $189 |
| 1973 | 370 | 450 | 375 | 319 | 370 |
| Rank: | | | | | |
| 1967 | -- | 1 | 3 | 4 | 2 |
| 1973 | -- | 1 | 2 | 4 | 3 |

Source: SSA Bulletin (July 1976) 10

TABLE 7b. AREA VARIATIONS IN PER CAPITA HOSPITAL USE, EXPENSE AND CAPACITY AMONG HOSPITAL SERVICE AREAS WITHIN VERMONT AND MAINE.

| | VERMONT (1969) | | | MAINE (1973) | |
|---|---|---|---|---|---|
| | Lowest Area | State Average | Highest Area | Lowest* Area | Highest* Area |
| Discharges/1000 | 115 | 143 | 196 | 127 | 235 |
| Patient Days/1000 | 897 | 1221 | 1578 | 831 | 1625 |
| Hospital Expense per capita | $58 | $82 | $120 | $72 | $109 |
| Beds/1000 | 3.4 | 4.2 | 5.9 | 3.8 | 5.7 |
| | | | | * age adjusted | |

Source: ref 28

residents in one area use only 897 patient days per 1000 population whereas residents in another area use 1578 patient days/1000. Yet a survey showed these residents have similar insurance coverage, illness rates, physician availability, and initiate physician visits equally often. Similar variations in hospital use exist in Maine. In both states, hospital use is highly correlated with available hospital beds.

Further, the use of common procedures varies even more than overall use (see Table 8), in such a way as to suggest extreme differences in the judgment and practice style of individual physicians. Quoting from Wennberg (ref 30) "Although there is an overall relationship between the rate of surgery and the number of surgeons, two areas with identical age-adjusted surgery rates achieve that rate by treating considerably different kinds of problems. For example, (in Vermont) the area highest in overall procedures in 1969 ranked among the highest areas in tonsillectomies, hernias and hemorrhoidectomies but among the lowest of the thirteen areas in appendectomies, cholecystectomies and hysterectomies. The area that ranked third in overall surgery was among the highest areas for appendectomies, cholecystectomies and hemorrhoidectomies but among the lowest for dilation and curettage and hysterectomies. Yet the evidence (albeit circumstantial) indicates that the distribution of health problems is the same among areas. This leads us to suggest that, at least in Vermont (the same appears true for Maine), surgeons do not allocate their professional workload across a range of health care problems, proportionate to population need and the relative numbers of surgeons. The preferences of individual surgeons rather than differences in patient illness or access to physicians, we believe, are a more likely explanation for the variations in procedure rates. Statistical correlations between certain diagnostic procedures

TABLE 8a. VARIATION IN NUMBER OF SURGICAL PROCEDURES PERFORMED PER 10,000 PERSONS FOR THE 13 VERMONT HOSPITAL SERVICE AREAS AND COMPARISON POPULATIONS, VERMONT, 1969. (RATES ADJUSTED TO VERMONT AGE COMPOSITION.)

| Surgical Procedure | Lowest Two Areas | | Entire State | Highest Two Areas | |
|---|---|---|---|---|---|
| All Surgery | 360 | 490 | 550 | 610 | 690 |
| Tonsillectomy | 13 | 32 | 43 | 85 | 151 |
| Appendectomy | 10 | 15 | 18 | 27 | 32 |
| Hemorrhoidectomy | 2 | 4 | 6 | 9 | 10 |
| Males | | | | | |
| Hernioplasty | 29 | 38 | 41 | 47 | 48 |
| Prostatectomy | 11 | 13 | 20 | 28 | 38 |
| Females | | | | | |
| Cholecystectomy | 17 | 19 | 27 | 46 | 57 |
| Hysterectomy | 20 | 22 | 30 | 34 | 60 |
| Mastectomy | 12 | 14 | 18 | 28 | 33 |
| Dilation & curettage | 30 | 42 | 55 | 108 | 141 |
| Varicose veins | 6 | 7 | 12 | 24 | 28 |

Note: Areas with highest or lowest rates for one procedure are generally not the same as the areas with highest and lowest rates for another procedure.

Source: ref 30

TABLE 8b.

1973 AGE-ADJUSTED INCIDENCE OF SURGICAL DISCHARGES AND NINE COMMON PROCEDURES IN MAINE AND MAINE HOSPITAL SERVICES AREAS WITH POPULATIONS OF 20,000 OR GREATER. PROCEDURES PER 10,000 POPULATION.

| *Area* | *All Surgical Discharges* | *Appendectomy* | *Prostatectomy (males)* | *Inguinal Hernia (males)* | *Hysterectomy (females)* | *Varicose Veins* | *Hemorrhoidectomy* | *Dilation & Curettage (females)* | *Tonsillectomy* | *Cholecystectomy (females)* |
|---|---|---|---|---|---|---|---|---|---|---|
| State as a whole | 689 | 17 | 25 | 45 | 59 | 5 | 7 | 77 | 62 | 35 |
| 1 | 613** | 18 | 18* | 40 | 46** | 4 | 6 | 58** | 36** | 37 |
| 2 | 670 | 11** | 22 | 37 | 59 | 6 | 3* | 86 | 23** | 46* |
| 3 | 742** | 13** | 35** | 47 | 63 | 4* | 4** | 83* | 54** | 33 |
| 4 | 606** | 17 | 28 | 45 | 41** | 3 | 5 | 49** | 47* | 36 |
| 5 | 594** | 14 | 18 | 45 | 48 | 6 | 5 | 84 | 35** | 31 |
| 6 | 640* | 21 | 26 | 51 | 47 | 6 | 6 | 87 | 60 | 35 |
| 7 | 688 | 17 | 27 | 49 | 93** | 6 | 9* | 76 | 59 | 34 |
| 8 | 738** | 17 | 40** | 45 | 67 | 4 | 7 | 117** | 55 | 50** |
| 9 | 688 | 15 | 20* | 53 | 39** | 10** | 9 | 74 | 62 | 29 |
| 10 | 864** | 19 | 25 | 52 | 58 | 5 | 9 | 114** | 105** | 55** |
| 11 | 954** | 22** | 33** | 49 | 60 | 8* | 19** | 86 | 122** | 39 |
| 12 | 579** | 19 | 18** | 35** | 51** | 5 | 5** | 67* | 77** | 28* |
| 13 | 764** | 19 | 31 | 60* | 48 | 7 | 14** | 78 | 77** | 27 |

*Chi-square significant at the .05 level
**Chi-square significant at the .01 level

Source: ref 28

and non-surgeons suggest this phenomenon is not limited to surgery. The bases for this behavior need to be further studied. They are, no doubt, complex, and may involve age, educational differences, or technical competence and skill in the performance of certain but not all procedures. But the important implication for this discussion is that there is no consensus *even among the specialists themselves* on how to use the technologies of a particular medical specialty... Because many, if not all, of the procedures which show marked variations have not been closely studied under controlled field trial conditions, there is little objective evidence about which judgments are 'correct' in the sense of which leads to more 'health' among survivors of the procedures. The costs, however, in terms of variations in expenditures and in terms of immediate case fatality rates are substantial."

Finding 9: Studies of current hospital utilization show a substantial number of admissions and patient days represent unnecessary or cost-ineffective use.

The previous finding raises the question, do the low utilization rates represent underuse of hospital care, or do the high utilization rates represent excessive use? The absence of detectable health differences suggests the latter may be more true than the former. The present finding strengthens this supposition of excessive use.

Two types of evidence support the present finding. The first comes from clinical studies calling in question the efficacy and cost-effectiveness (health efficiency) of many common medical procedures. This evidence is well reviewed by Cochrane (ref 31) and Hiatt (ref 32). Some examples from this research follow. In a considerable fraction of cases, clinical trials show no medical gain in treating acute heart disease in a hospital coronary care unit compared with treatment at home. Many types of surgery can be performed on an outpatient basis as effectively as on an inpatient basis. A growing number of studies suggest that for many inpatient procedures, the patient can be discharged much earlier than is now common practice without medical disadvantages. Finally, a number of recently common procedures are now known to work positive harm; gastric freezing and ilial bypass are examples.

A second type of evidence comes from various cost control studies. Because this evidence does not directly measure patient end-results, it is less rigorous than the first type but is still persuasive. Several sources review this evidence (ref 72). One class of research studies -- looking at such things as pre-surgical second opinions, pre-admission certification, utilization review, etc. -- show that when a group of physicians can be motivated to review the appropriateness of hospital admissions and length of stay, these tend to fall. (The fact that they do not fall as rapidly under required utilization controls suggests that regulation may not be a sufficient motivator; nevertheless the continuing slow decline in length of stay generally suggests that this regulation has some effect.) A second class of studies show that many patient days could be eliminated by better management and service practices. Thus pre-admission testing, scheduling of surgery sooner after admission, speedier turn-around on test results, etc. would all substantially reduce patient days, but are all too frequently found neglected in the hospitals studied.

It is impossible to generalize from these studies alone what percentage of current utilization is unnecessary or cost-ineffective. All these studies have been done on a local basis, and the previous finding shows per capita utilization varies greatly on a local basis. Nevertheless the evidence supports the contention that current utilization levels are excessive from a health efficiency point of view.

Finding 10: The amount of excessively-used capacity depends upon a judgment of how much excess hospital utilization now occurs. The evidence suggests that 10% would be a quite conservative estimate.

Taking together the evidence that HMOs could probably serve a general population with 600-800 patient days per 1000 population, that fee-for-service patient days vary over 50% on a small-area basis (from 900-1600 patient days/1000 in Vermont and Maine for example), and that a substantial but uncertain proportion of these days are known to be unnecessary, it would seem safe to estimate that at least 10% of the current national average rate of 1207 patient days/1000 may be deemed excessive. It may also be reckoned that this excess use is unevenly distributed across the nation. If a concerted effort were made to evaluate currently acceptable medical styles of practice and encourage only the more efficient styles, the amount of use deemed excessive would likely be much larger.

The combined effect of reducing excess under-utilized and excessively-utilized hospital capacity on required bed rates is shown in Table 9. Currently the United States averages roundly 1200 patient days and 4.4 acute beds per 1000 population at an occupancy of 75%. If under-utilized capacity were reduced sufficiently to raise average occupancy to the Hill-Burton standard of 85%,* the table shows that only 3.9 beds/1000 would be required, a decrease of 10% in the bed rate. If excessively-utilized capacity were reduced by lowering utilization to 1100 days/1000 -- which the evidence suggests would be quite safe medically if done appropriately -- then at 85% occupancy only 3.5 beds/1000 would be required, a further decrease of 10% in the current bed rate, or a 20% decrease in total.

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* This does not mean that each hospital should or can operate at 85% occupancy or better. As shown in Table 4, smaller hospitals must have lower occupancies to accommodate fluctuations in use. However, 85% appears to be a feasible national average.

TABLE 9. REQUIRED BED RATES PER THOUSAND PERSONS UNDER VARIOUS ASSUMPTIONS OF EXCESS UNDER-UTILIZED AND EXCESSIVELY-UTILIZED CAPACITY

| Assumed Patient Days/1000 | Assumed Occupancy: | | |
|---|---|---|---|
| | 75%* | 85% | |
| 1300 (days/1000) | 4.7 (beds/1000) | 4.2 | increasing excessively-utilized capacity ↑ |
| 1200* | 4.4* | 3.9 | |
| 1100 | 4.0 | 3.5 | |
| 1000 | 3.6 | 3.2 | |
| 900 | 3.3 | 2.9 | |
| (*current level) | ← increasing under-utilized capacity | | |

To put these figures in perspective, the Canadian province of Ontario has just declared officially that its goal will be to reduce acute beds from the current rate of about 5.0 to 4.0 beds/1000, and there is unofficial talk about eventually moving to 3.5 beds/1000 sometime in the unspecified future (ref 33). In England, the 1962 hospital plan of the Ministry of Health called for reducing beds to a target goal of 3.3 beds/1000 by 1975, and some consideration is now being given that perhaps 2.0 beds/1000 might suffice (ref 29). (It is also true that Britain is not as rich as the U.S., and may have to accept a more utilitarian standard of practice than Americans. But the point for this discussion is that Britain has found no adverse impact on health, even in areas with less than 3 beds/1000. The reduction is not a matter of health, but of convenience, amenity and style. However, the fact that after 13 years the British have not yet achieved the 3.3 bed goal in several regions indicates the difficulty of the task.)

## G. The Effect of Reducing Hospital Capacity upon Utilization and Health: the "Reverse Roemer Effect"

We found from our discussion of the Roemer effect (Section D above) that "more beds beget more patients." We shall now ask if there is a reverse Roemer effect, that "less beds beget less patients." More specifically we ask, if a community has become accustomed to the provision of a certain level of hospital services, can the act of reducing hospital capacity of itself induce a drop in utilization, and can it do so without threat to health.

Finding 11: The evidence, while not wholly direct, is strongly persuasive that a reduction in hospital capacity will produce a drop in utilization, and if organized appropriately will do so without harm to health. At current use and bed levels, the estimated magnitude of the effect is that a 10% decrease in bed capacity will induce roughly a 4% drop in patient days.

To our knowledge only the British have directly studied the effect of reducing hospital capacity (reviewed in ref 29). In one of two areas where the British have reduced the bed rate to 2 beds per 1000 population and are monitoring the results, bed use has already fallen below this level despite an increase in admissions. (It should be noted that the British have an extensive home care program to support this low provision of hospital beds.) Admissions in the study area are lower than in other areas, and although no overt indications are apparent, the question is still open whether an effective system of health care is being provided at this low bed rate.

Aside from this direct study, the evidence for the reverse Roemer effect and its effect on health rests on comparison across areas with different levels of use and beds. Sophisticated statistical analyses of this cross-sectional data (ref 13,16) show that the relationship between beds and use persists even when nearly every other factor that could conceivably be operative is controlled for. May has therefore concluded that the Roemer effect is not unidirectional, and that a reduction in bed capacity would reduce admissions and patient days. Extrapolating May's quantitative results suggests the magnitude of the effect is that a 10% change in the beds/1000 will induce roughly a 4% change in patient days/1000.

The British have investigated the effect on health most directly (reviewed in ref 29). A decrease in admissions was not found to be associated with a rise in mortality. Admissions reflected bed availability rather than mortality. Direct observation of patients and hospitals in areas with high and low admissions led to the tentative conclusions that higher admission rates were due to additional admissions of patients with less severe conditions. Rafferty (ref 34) reached similar conclusions from analyzing records in an American hospital. Apparently, in areas of bed scarcity, clinicians economize on the use of beds by better patient management practices. These findings support the intuitive notion that if beds are tight and occupancy high, physicians and hospitals will have no incentive to admit generously, and have every incentive to move less sick patients out of the hospital. It should also be noted that, since any hospital admission and procedure carries some medical risk, appropriate reduction of utilization can minimize iatrogenic effects.

The weight of this evidence, direct and indirect, supports the existence of a reverse Roemer effect. With physician attention to admitting priorities and efficient patient management -- which the pressure of tight beds is likely to encourage -- there seems no reason to fear that a reasonable reduction in hospital capacity will have any effect on health.

## H. Conclusions

The above findings lead us to a number of conclusions of considerable policy significance. These conclusions underlie much of the remainder of this report.

1. Beyond some irreducible minimum (which is uncertain but may be in the neighborhood of 600-800 patient days and 2-3 beds per 1000 population), the quantity and use of acute hosital beds are a matter of policy, not health. This conclusion follows from the substantial body of studies documenting great variations in per capita hospital utilization rates which cannot be accounted for by any known health status or risk factors in the population. The strong, causal connection found between hospital use and hospital capacity, but not health or need, leads us to conclude that high rates of hospital use and expense are the product of (1) medical practice styles which emphasize excessive use of costly, intensive types of care when less costly types of care would suffice, and (2) inefficient management of patient and resources by physician and hospital. It cannot be concluded that such "high style" care is medically ineffective, for health levels appear no worse in areas of high use and cost. It can be concluded that such "high style" is very inefficient, for health levels are no better than in areas where hospital use is much lower and less intensive. Thus the matter is one of policy not health. What level of hospital use and capacity does the nation wish in order to satisfy its notions of custom and convenience? And do communities with low use and capacity wish to keep on subsidizing -- through taxes and insurance premiums -- communities with high use and capacity but with no demonstrably greater health need?

   The substantial evidence of excess hospital use and capacity, which make little or no contribution to health levels at great cost, indicates that current levels of hospital use and capacity represent unnecessary, even wasteful, diversion of limited national resources from other pressing health and human service needs. This conclusion implies a value judgment, namely that policymakers and the public would prefer a reduction in excessive hospital use and capacity -- which would not affect their health, which might or might not be slightly less convenient, and which might be less impressive technologically -- to free resources for other measures that might produce more health and well-being. The value judgment of "excess" hospital use and capacity may be likened to the "energy waste" issue. In the days of cheap energy, Americans became accustomed to extravagant energy consumption; e.g. inefficient appliances, poorly insulated homes, etc. Now they are being asked to change their style of living to use energy more efficiently. The standard of living is not expected to decline, but change and accommodation will be necessary, e.g. lighter cars, fewer but fuller scheduled plane flights, etc. In the same way, Americans and their providers became accustomed to excessive use of the hospital...excessive from the standpoint of simply producing health. More conservative use of the hospital could result in substantial savings without decline in health levels, but again change and accommodation will be required. Just as Americans regard their cars as something more than personal transportation, they regard their hospitals as something more than health production units. They are not likely to immediately understand or welcome changes in their hospital supply any more than changes in their cars. But as the public and providers increasingly understand the high costs and low health benefits of present levels of hospital use and capacity, they may well wish to consider the trade-offs that could shift resources to much more productive measures. Increases in hospital use and more intensive, costly types of inpatient care appear to be contributing little measurable improvement in health levels. The best single measure of resource diversion to acute hospital use is the rise in per capita hospital expenditures relative to per capita GNP. (Note, cost per hospital day or per stay are misleading indices of hospital cost escalation. They presently understate the true inflation. On the other hand, if excessive use were reduced so that only the truly sick were hospitalized, cost per day or per stay might be higher even though per capita hospital expense was reduced.)

3. Heretofore, the emphasis has been on planners to justify that any reduction in hospital use and capacity would not threaten health. We conclude that the evidence for excess use and capacity is now so substantial that the shoe is on the other foot: that planners in areas of high use and capacity should justify what is so different about their community that both use and capacity could not be reduced to more reasonable levels. Heretofore, areas with high hospital capacity have pointed to high use as a justification of need, not only for existing capacity but for additions to it. The strong evidence for the Roemer effect, that "beds beget patients" exposes the circularity in this logic. As long as we are dealing with use and capacity at current national levels, health is not at issue, and population characteristics, such as age, sex, education, etc., provide a much more stable basis for use and capacity criteria. If after adjusting for such characteristics, a community has hospital use and capacity levels significantly higher than comparable areas, the onus would appear to be on that community to make explicit any "hidden" additional factors justifying its exceptional use of resources.

4. If effort is concentrated in areas of high per capita use and capacity, and reasonable deliberateness and common sense are exercised, there appears to be no health reasons why per capita use could not be safely reduced by at least 10% and per capita hospital capacity by up to 20% from their current national levels. Five to 10% of hospital capacity could be reduced simply by retiring excessively idle facilities. There seems no reason to engage in pointless debate over the irreducible minimum to which hospital use and capacity could be cut before medical harm is done. Clearly, the more closely one approaches this point, the more well-organized and sensitive the health care system must be to health-efficient priorities and equitable distribution. This degree of organization will be lacking for some time. But equally clearly, the amount of excess use and capacity documented in our findings is

so substantial that we are nowhere near this point. With the irreducible minimum suggested by the evidence (somewhere around 600-800 days and 2-3 beds per 1000 population) so far below current national use and bed levels (1200 days and 4.4 beds per 1000), any reduction in use in the range of 1200 to 1100 patient days, and in capacity from 4.4 to 3.6 beds per 1000 should be quite safe from a health standpoint, as long as it is accomplished by bringing areas of high use and capacity down toward the average rather than attempting across-the-board cuts. For example, there appears no health reason why an area with 1600 patient days and 5.8 beds per 1000 population could not be safely reduced to 1300 days and 4.2 beds or less per 1000 population. No sacrifice of medical quality to cost containment is involved, merely a change from higher to lower, less costly styles of medical practice. The evidence shows that a community, including any currently underserved groups in the community, can be more than amply provided for at this level of service and capacity if the medical care system is not inappropriately organized.

5. A policy to reduce excess hospital capacity, if successful, would of itself also reduce excessive use. To contain hospital costs (per capita hospital expenditures), this policy would have to aim at reducing both the number of beds (beds per 1000 population) and the "intensiveness" of beds (labor and assets per bed). The evidence for the "reverse Roemer effect" shows that a reduction in hospital capacity will induce a proportionate but smaller decrease in hospital use, even in the absence of other measures to reduce utilization. The evidence indicates that this fall in use occurs by physicians moving less severe cases, who can be treated equally well on an ambulatory basis, out of the hospital. However, it is not enough to reduce just the quantity of available beds. The "intensiveness" of the beds -- e.g. the number of employees and costly technology associated with these beds -- must also be contained or reduced, lest the fall in patient days be more than offset by rising intensity costs.

6. Throughout the remainder of this report we shall use terms like "excessive," "unnecessary" and "need." These terms are in fact value judgments and policy judgments, not facts to be empirically determined. For purposes of this report, we shall conceptually define "need" in terms of the uncertain minimum (see 1 above) in use and resource levels below which health levels might be measurably affected. Use and resource levels above this amount are deemed "excessive" and "unnecessary," not in the sense that they constitute bad or unacceptable medical practice (usually they do not), but in the sense that a well-organized medical care system could produce equal health levels at the minimum rates of use and resources by avoiding costly, high style modes of medical practice when less costly, lower style modes of practice would suffice. This conceptual definition is useful operationally because the nation is so far above this uncertain minimum that it is perfectly safe to label conservative reductions in high use and high resources as reductions in excessive and unnecessary medical care and medical resources.

However, the American public and its providers may find this minimum provision of services and resources too utilitarian for their taste, and may prefer a more convenient and luxurious standard of practice. The trade-off will lie between desired level of amenity in hospital care vs. resources desired for other urgent needs. Clearly, eventual policy judgments of "need," "necessity" and "excess" will have to reflect the desires of the American people. To make the trade-offs clearly visible, this report will define and use these terms as above, on the basis of health impact, not taste.

## Chapter II

## COSTS, BENEFITS AND SIDE-EFFECTS OF EXCESS HOSPITAL CAPACITY REDUCTION

This chapter addresses the following questions:

- What are the expected savings from excess capacity reduction? What are the costs?
- What are the long-range implications for health policy?
- What are the possible side-effects on the health care system and communities?

### A. Savings and Costs

No very precise estimate of the net savings achievable by excess hospital capacity can be made. Rather each individual community, with all its idiosyncratic factors, must be examined to see what is possible. For example, in an isolated rural community the need to have available beds because there is no other hospital to go to may override closing hospital capacity that is usually idle. Or, retiring excess capacity in a new hospital may involve larger sunk capital costs than in an older hospital.* Due to many individual factors like these, the feasibility and potential savings from excess capacity reduction will vary greatly from one community to the next.

It is also extremely important to keep in mind that the savings resulting from excess capacity reduction are, as the economists say, "marginal cost" savings rather than "average cost" savings. By "marginal cost" is meant the cost to produce the last few patient days, which may be more or less than the average cost of all patient days. Thus the marginal cost savings will depend on the cost structure of the affected hospitals, particularly on the ratio of fixed to variable costs. The marginal cost savings will also critically depend on how the reduction is done. There are at least four possibilities:

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* This does not mean that one should always retire capacity in older hospitals. As noted in Chapter I, sunk cost is relatively small compared with operating cost. If a new hospital is poorly utilized (e.g. lots of idle beds and the remainder filled with patients who could be treated less intensively), there may be a big pay-off to closing the new hospital, or merging it with a more efficient older hospital (see Chapter IV).

-- Retire individual beds. By this is meant that one or more hospitals close some excess beds in any or all service departments but all hospitals and service departments continue to operate.

-- Retire service departments. By this is meant that one or more hospitals close out, or convert to other use, an entire service department (e.g. obstetrics, pediatrics, etc.) and the beds, equipment and staff associated with it.

-- Retire whole hospitals. By this is meant that an entire hospital is closed or converted to other use.

-- Moratorium. By this is meant a prohibition on adding any additional hospital capacity in a community. While no existing capacity is retired, still -- if the community population is growing -- the bed rate per 1000 persons falls, so that beds are being used more efficiently and the reverse Roemer effect begins to reduce patient days per 1000 persons.

Since it is impossible to predict in advance just what combination of reducing individual beds, service departments, and whole hospitals and/or moratoria will be medically and politically acceptable in each community, it is difficult to arrive at a general estimate of savings possible.

A final factor of uncertainty in estimating net savings from excess capacity reduction is that we do not know the workings of the reverse Roemer effect in detail. We know on the average that, at average current levels of capacity, a 10% reduction in capacity levels will produce roughly a 4% drop in hospital use rates. But how the reverse Roemer effect will work out in any particular community will depend on many characteristics, including its current level of capacity and use, and which combination of the above approaches is used. Depending on these factors, the reverse Roemer effect could be weaker or stronger than average.

Having made all these caveats as to why good general estimates are impossible, we will now make gross general estimates. These estimates should not be taken literally. Rather they are intended as "ball-park" approximations to give a feel for the general order-of-magnitude and relative efficiency of each of the approaches above. The details of the estimation are presented in Appendix A. The major results are shown in Table 1 and discussed below.

We begin with some general considerations about the results. First, the results are based on a typical community, by which we mean a community whose per capita hospital costs, use and capacity are approximated by national average rates. Second, the savings are expressed as the percentage reduction in annual per capita hospital expenditures had no excess capacity been retired. It is important to recognize that hospital capacity reduction will not necessarily stop inflation in the remaining hospital beds; this will depend on simultaneously curtailing the flow of capital and labor inputs that would allow hospitals to make the remaining beds excessively intensive. Rather reduction of hospital capacity will lower expenditures from what they otherwise would have been, and these savings will be realized on a continuing basis. Third, in some cases it will be necessary or useful to purchase or pay-off the debt associated with the retired space and capital equipment (see Chapter V, Section D.8). This will be an initial, one-time cost. For comparative purposes, we will also express this one-time cost as a percentage of annual per capita hospital expenditures.

TABLE 1. CRUDE ESTIMATES: ANNUAL SAVINGS IN PER CAPITA HOSPITAL COSTS, AND INITIAL EXPENSE, RESULTING FROM A 10% REDUCTION IN PER CAPITA HOSPITAL CAPACITY (AS A PERCENT OF ANNUAL PER CAPITA HOSPITAL COST IN THE ABSENCE OF REDUCTION).

| Type of Reduction | Initial Expense* (if purchased) | Possibility of Conversion** | Annual Savings per 1000 (no Roemer effect) | Annual Savings per 1000 (with Roemer effect) |
|---|---|---|---|---|
| 1. Individual Beds | 15% | poor | 0.5% | 2.5% |
| 2. Service Departments | 18% | some | 2.0% | 4.0% |
| 3. Hospitals | 22% | good | 6.0% | 8.0% |
| 4. Moratorium*** -- in nth year after initiation ($n < 10$) | 0 | none | $\frac{n}{10} \cdot 6.0\%$ | $\frac{n}{10} \cdot 8.0\%$ |

Note : In 1974, 100% = $136,400 hospital expenditures per 1000 persons per year.

*Note : Initial expense is a one-time expense reported as a % of annual hospital cost in the year that the reduction occurs.

**Note : In our method, savings from conversion to other use does not show up as savings in hospital costs, but as an offsetting reduction in initial expense. It cannot be estimated unless the return on capital of the other use is known. Mergers could also reduce initial expense of closing whole hospitals.

***Note: The results assume a 1% population growth per year. Faster (slower) population growth would produce greater (less) savings.

1. Retirement of Whole Hospitals. This approach has the greatest pay-off. A 10% reduction in hospital beds per 1000 population by closing entire hospitals produces annual savings of roughly 8% in annual per capita hospital expenditures. Because it constrains beds reasonably definitively, this approach is also most likely to produce the strongest reverse Roemer effect. Savings are produced both by a decline in patient days per 1000 population, and by decreased cost per day due to more efficient use of the remaining hospitals. (Even if the reverse Roemer effect were weak or absent, the efficiency of increased occupancy in the remaining hospitals compensates the lessened decline in patient days such that annual savings are still roughly 6% of per capita hospital costs.) If it were necessary to purchase the hospitals before retiring them, then purchase expense would be roughly 22% of annual per capita hospital expense. Thus this cost is an excellent investment, repaying itself in three to four years*. If the retired hospital could be converted to other use, this would help offset or reduce the initial purchase cost, and improve the investment still further.

2. Retirement of Individual Beds. This approach is the least effective and, because individual bed complements are so ambiguous, has the greatest uncertainty in the strength of the reverse Roemer effect. A 10% reduction in hospital beds due to closing individual beds produces annual savings of from roughly 0.5% to 2.5% in annual per capita hospital expenditures, depending on the strength of the reverse Roemer effect. (Note that if the reverse Roemer effect is strong, cost per day will actually rise because fixed costs are spread over a smaller patient base; however the decline in patient days more than offsets the rise in cost per day. (See Appendix A.) If the capital cost of the retired bed space is purchased, the initial one-time cost is estimated at about 15% of annual per capita expenditures. Depending on the reverse Roemer effect (and hospital reimbursement practices) it could take from 5 to 30 years to recover* the initial investment in savings. Moreover, since the bed space is likely to be scattered throughout the hospital, it may be difficult to consolidate the space and convert it to other use; thus the investment can not be reduced by conversion easily. This does not mean individual beds should not be retired. Rather they would best be retired by persuasion and pressure, not by purchase. A possible 2.5% annual savings is not to be sneezed at if there is no financial risk involved.

3. Retirement of Service Departments. This approach has a pay-off intermediate to the above two approaches. A 10% reduction in hospital beds per 1000 population by closing or consolidating unnecessary service

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* Note, when we say the investment is recovered, we mean that the cumulative annual savings to the community balance off the initial investment after this many years (see Table 1). The investment is not necessarily directly recovered by those who put up the purchase price unless the purchase price is assessed against those who realize the savings (see Chapter VI).

departments produces annual savings of from roughly 2% to 4% in annual per capita hospital expenditures, depending on the strength of the Roemer effect. If the space is purchased, the investment will be recovered* in savings in from 5 to 10 years. Since the retired bed space occupies one place in the hospital, there may be some chance to convert the space to other use.

4. Moratorium. The pay-off of this approach is highly dependent on the rate of population growth. If the community's population is growing at roughly the national average, about 1% a year, the bed rate per 1000 population would fall by 10% in about 10 to 11 years. The savings in annual per capita hospital expense in the first year would be negligible, but in the tenth year would equal those of closing whole hospitals, about 8%, a sizable amount. Since no initial purchase is required, and no political furor is roused by closing existing capacity, this approach is very attractive where appropriate. The rub is that a great deal of excess hospital capacity is concentrated in center cities with declining population, and shortages of capacity may exist in growing suburbs. A general moratorium would freeze in these urban-suburban imbalances, and promote excess use, via the Roemer effect, in the center city. Thus a moratorium should be used carefully and be limited to areas where it would be appropriate.

To give a feel for the dollars involved in these estimates, suppose a planning area has a population of 500,000 persons. Suppose the area has a bed rate of 4.4 beds per 1000 population and a utilization rate of 1200 patient days per 1000. At 1974 prices, this community would incur $68,000,000 in annual hospital costs. If the community now reduced the bed rate by 10% to 4 beds per 1000 population, the reverse Roemer effect would reduce utilization to roughly 1150 days per 1000 population. If the community accomplished the reduction by closing whole hospitals, it would achieve annual savings of roughly $5,000,000. If the reduction were accomplished by closing service departments, the annual savings would be $2,500,000. If the reduction were accomplished by retiring individual beds, the annual savings would be about $1,500,000 (about $500,000 if the reverse Roemer effect was weak or absent.) The savings realized by a moratorium would depend on how population growth rate affected the bed rate. In all of the above estimates, if the bed rate were reduced even further, say by 15% or 20%, the savings would increase proportionately.

In sum, the above estimates give approximate "ball-park" savings and costs of various approaches to retiring excess hospital capacity. In any particular community, savings and costs may be considerably greater or less than these estimates. The most cost-effective approach is to retire whole hospitals, least effective to retire individual beds. A moratorium could be very attractive if applied in specific areas where it was appropriate.

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* See previous note.

## B. The Implications of Excess Hospital Capacity Reduction for Health Policy.

Before the nation takes a stand for or against a policy of direct excess hospital capacity reduction, it would seem wise to examine how this policy might fit into larger overall policy strategies to deal with the health care system, and to examine in what directions this policy may drive such overall strategies. We perform such an analysis in this section.

Lacking a unified rigorous understanding of the causes of health care system problems, the nation has hitherto been unable to arrive at a concerted overall health care policy. To build a more scientific understanding, Congress increased support of health services research about a decade ago. In the meantime, Congress and the states have had to respond to the problems as best they could. The result has been a series of fragmented, reactive measures, often at cross purposes to one another, which have not worked particularly well. Moreover these measures tend to acquire a life of their own, and push the nation in directions it is not fully aware of.

However, the research effort is now bearing fruit, and a much deeper more comprehensive understanding of the health care system is emerging (one facet of these results has already been reported in Chapter I). As this understanding passes into common knowledge, it should be more possible to come to consensus on an overall policy for the health care system. Below we briefly note the goals of such a policy, describe the underlying causes of the problems uncovered by research, and classify the major options for health care policy. Then we show where excess capacity reduction fits into this big picture, and which options it tends to favor.

The major goals of health care policy* can be stated as (1) financial protection of individuals and families from undue medical expense, (2) adequate and equitable distribution and availability of health care services, (3) adequate effectiveness and quality of health care services in producing health and patient satisfaction, and (4) containment of health care costs. The latter goal, cost containment, is central. Unless costs are contained, the dollars for the remaining goals will not be there. Indeed, from the results of Chapter I, it would appear that health care is already receiving perhaps disproportionate resources compared with other non-health care measures -- e.g. environment, nutrition, education, etc. -- that promote health, the ultimate goal of health policy.

### Causes of Cost Escalation

The causes of health care cost escalation and the major options to contain cost have been reviewed by McClure (ref 36). In essence, the trends of the last three decades have slowly eroded all market discipline so that the health care system now acts with virtually no cost restraint. Under the present system, the spread of comprehensive health insurance, both public and private, reduces the effective price of services to the consumer, provides a virtual blank check to the provider, and allows only weak, fragmented control by public and private payers. There is thus no incentive for either consumer or provider to restrain cost, and strong incentives exist to raise costs. When someone else pays, we consumers want the best, including luxury and convenience, and under the present system our providers have every professional and financial incentive to provide it to us. Since the cost and style (though not the effectiveness) of medical care can eventually be legitimately* expanded to absorb every dollar available, costs go up inexorably. It is not that input costs are pushing up prices (e.g. not "cost-push"); rather the bottomless pool of insurance dollars allows providers to raise prices and put the additional money to more elaborate procedures, manpower and technology (e.g. a provider-induced "demand-pull").** Since the nation is busily training vast numbers of new physicians and other health personnel, and developing ever more complex medical technology, the potential for cost escalation is enormous.

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* We define "health care policy" as policy which deals with the delivery and financing of health care. It is one part of "health policy," which deals with all measures that affect the nation's health levels.

The options to deal with cost escalation boil down to a few major choices. Since the present system of health care delivery and financing operates with little semblance of market discipline, the first major choice is whether to (1) restructure the system to restore private market discipline, or (2) substitute public utility regulation as the disciplinary force on costs, or (3) use some combination of both. Within each of these strategies, there are also a few big choices.

## Consumer Market Strategies

Only two major strategies to restore private market discplines have been advanced. One focuses on the use of direct consumer incentives, the other emphasizes provider incentives. In both approaches the emphasis is upon making the health care system more automatically self-regulating so that the need for government intervention is reduced.

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* We emphasize that costs can be legitimately raised. (While fraud and corruption must be properly policed, they are a small part of the problem.) The real question is whether such care is cost-effective. How much of their resources do the American people wish to put to medical care viz a viz other goods and services that increase their well-being?

** It may be important to establish the cause of health care cost escalation in legal and legislative language. Unless courts understand that market discipline has been destroyed in the health care system they may miscontrue private and public efforts to reduce excess hospital capacity as a restraint of trade.

-- Consumer Incentives Approach. This approach gives the consumer strong incentives to purchase health care more prudently by greatly increasing the deductibles and coinsurance the consumer has to pay. Financial protection is assured by placing a limit on the total amount any individual is liable for, and this maximum limit can be income-related to assure that this amount is well within the individual's ability to pay. This approach and various modifications are discussed by Feldstein (ref 69). The evidence suggests that this approach could work well and that it has many advantages. However, deductibles and coinsurance of the size needed will be difficult to make politically acceptable if this approach is used alone, unless advocates can do a better job of increasing public understanding.

-- Provider Incentives Approach. This approach places providers under strong incentives to attend to the cost as well as quality of care. This is achieved by encouraging HMOs and other prepaid alternative delivery systems to become a substantial or even dominant proportion of the private medical care system. These prepaid delivery systems must contain costs because consumers who enroll with them pay a fixed premium each month, and in return they must provide all medical care needed. The prepaid delivery systems must pay attention to quality and cost because consumers can always disenroll, and will enroll in organizations with a reputation for good quality at reasonable cost. This approach has been discussed by Ellwood et al (ref 37) and its current political status by Starr (ref 38). The evidence suggests this approach would work well and has many advantages. However, the amount of provider initiative required will be difficult to achieve if this approach is to be used alone, unless advocates can do a better job of increasing public and provider understanding.

## Public Utility Strategies

There are also two major choices in a public utility approach to health care cost containment. The first approach emphasizes control of the individual pieces of the cost equation, the second emphasizes placing a "lid" or ceiling on the resources that can be used by the system. Both anticipate strongly increased government intervention as a substitute for the present absence of market discipline.

-- Piecemeal Public Utility Approach. This approach attempts to control all the various elements that can raise costs, such as the price of services, the quantity of services and the intensity of the mix of services. The Achilles heel of this approach is that it demands a regulatory judgment on virtually every medical transaction, usually a medical judgment. Not only is this excessively demanding and expensive, the medical judgments must be made by physicians, whose professional-, social- and self-interest puts them in a difficult conflict of interest situation. The evidence on regulation generally has been reviewed by Noll (ref 39), and the evidence on health care regulation in particular by O'Donoghue (ref 40). There appears little reason to be optimistic about this approach. But because piecemeal regulation can be approached incrementally, the nation appears to be rushing rather blindly in this direction. The danger is that regulation is difficult to dismantle once in place, even if it is ineffective. This type of elaborate, rigidifying controls may therefore make it more expensive and difficult to work toward a more successful approach.

-- *Public Utility Allocation Approach ("Lid").* In this approach government is given sufficient control over resource inputs and reimbursement that it can set the total health care budget in advance, and then allocate it out via some administrative or regulatory mechanism. This places an absolutely controllable "lid" on health care expenditures, much the same as the school budget places a limit on school expenditures. It is not necessary to nationalize the health care system; but in order to assure that providers stay within the budget and are responsive to public desires, the allocation mechanism must be accompanied by strong controls over inputs. The virtue of the approach is that government makes overall budget decisions and does not have to sit in on every medical transaction; providers can work out the details within the constraint of the budget. The experience of England suggests that this approach can contain costs very effectively. But it will be difficult to make this degree of public control politically acceptable.

## General Policy Considerations

The above classification appears to exhaust the major choices.* Presently the nation appears to be pursuing the piecemeal public utility regulation approach, an approach unlikely to work well. This means it will eventually have to move to one or a combination of the three approaches more likely to work -- consumer incentives, provider incentives and/or a government lid -- all of which are politically difficult to implement. In a sense then, *the principal problem of health care policy is no longer a technical problem, it is a problem of raising public understanding. We know the major devices likely to work, we simply do not have the political understanding and support to implement them. The public not only does not understand that it has real choices, representing very different values and implications for the future health care system; it does not understand that change is necessary* to restore economic discipline to the system sufficient to contain cost.

For a number of reasons *it would appear wise at the present time to keep open all three options that might work.* First, it would seem unwise to foreclose on an option before the nation had a chance to make up its mind. Second, because each approach will have slow political going, together their combined effect on cost containment could be mutually supportive and achieve more immediate results than any single option alone. For example, prepaid delivery systems and deductibles and coinsurance take some of the pressure off regulation, and thus regulatory controls do not have to be made so strong immediately. Deductibles and coinsurance keep consumers directly cost conscious so that they may be more willing to support stronger regulation.* Third, each option has distinct merits. For example, coinsurance and deductibles are the only approach which allows the prudent consumer to directly benefit from his own actions. Or for example, perhaps the most important benefit of HMOs has not been their very real cost advantages, but rather that they have provided an alternative to which we can compare the traditional fee-for-service system. This benefit will be important to retain even if the nation opts for a public utility approach. Had HMOs not been around, we would lack important evidence, for instance, that effective medical care can be provided with half the hospitalization of the traditional system. Or, even if the nation opts for a market approach, regulation of tertiary care will probably be necessary in any event, because coinsurance and deductibles cannot be employed at this level of expense, and because equitable distribution of these scarce expensive resources is probably beyond the power of the market anyway. Fourth, we need to know more about how, and if, these options can be effectively combined. This would best be learned by pursuing all three approaches simultaneously.

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* There are of course a great number of variants possible within each major choice.

Because we are presently emphasizing piecemeal regulatory measures, attention must be given to directing these measures more toward the three options that might work. A full discussion is beyond the scope of this report, but the following guidelines seem pertinent and will be considered throughout this report:

-- Policy should emphasize those incremental regulatory measures which anticipate, and will eventually be necessary, to put a budgetary lid on the health care system, e.g. the public utility allocation approach.

-- Care should be taken that such regulatory measures do not inhibit or foreclose the growth of prepaid alternative delivery systems or the increased use of appropriate deductibles and coinsurance.

-- Policy should also emphasize incremental supportive measures which encourage the use of appropriate deductibles and coinsurance and the growth of prepaid delivery systems.

## Excess Hospital Capacity Reduction

We can now analyze excess capacity reduction within the context of the above policy classification and guidelines. Direct reduction of excess hospital capacity aims at cost containment by curtailing supply.** The first effect of removing capacity is to use existing capacity more efficiently. But its strongest effect comes when capacity is made sufficiently tight that providers are compelled to make choices as to which patients really belong in the hospital and which can be effectively treated elsewhere (i.e. the reverse Roemer effect begins to operate). It is use which generates costs, and thus it is the effect of tight capacity on use that makes direct reduction most effective.

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* Canadian observers have suggested the absence of deductibles and coinsurance have made the Canadian public insensitive and unsupportive of cost control measures.

** Prepaid delivery system and consumer cost-sharing strategies aim at curtailing demand, thereby eventually indirectly causing capacity to decline because it can't be supported.

This implies, first, that excess capacity reduction must be accompanied by strong control over entry by new hospitals into the field and over expansion of existing hospitals. It certainly makes little sense to go to the effort and expense of reducing existing capacity if the remaining hospitals or new hospitals can simply replace or augment capacity retired so that supply remains unconstrained. Thus a policy of excess hospital capacity reduction will demand strengthening of other supply and capital controls.

Second, if supply is constrained in what is essentially a (provider induced) demand-pull situation, elementary economics predicts that the remaining hospitals can exercise more or less semi-monopolistic powers. For example, if nuclear medicine units are retired from all hospitals but one, and no one else is permitted to enter the field, who then determines the price of inpatient therapeutic radiology services and which physicians are allowed privileges to the equipment. We do not believe that most hospitals will intentionally abuse this monopolistic power to gouge consumers. Rather, following the incentives under which they operate (see Chapter III, Section A), hospitals will continue to escalate the style and quality of care as they see it, and support the additional costs by price increases. Constraining the supply of capacity will therefore require strengthened reimbursement and access controls.

In sum, if it is to be a significant force in cost containment, the direct reduction of excess hospital capacity tends to drive health care policy toward a public utility approach. This does not mean that private sector buyers cannot play a large role in excess capacity reduction; indeed there are considerable advantages to have them do so (see Chapters V and VI). It does mean that certain kinds of additional external controls will be necessary.

Unlike many current regulatory measures, excess hospital capacity reduction appears to be a constructive incremental step toward placing a budgetary "lid" on the health care system. In a public utility allocation approach, it will be necessary to control the supply of hospitals and other resources in order to allocate the budget and assure it is not exceeded. Moreover control of hospital capacity, like any "lid" approach, helps move regulators away from trying to control myriad individual medical transactions and more toward controlling a few large constraints which govern system behavior. Additionally, if done properly, excess capacity reduction will help focus regulatory attention on these larger, critical performance parameters -- such as bed rates, asset rates, use rates and expense rates, per 1000 persons. Such a larger, more visible focus can then be used to draw together and coordinate existing, fragmented regulatory controls, so that the nation moves in a rational rather than irrational way toward a public utility "lid" approach.

There appears to be no conflict between excess hospital capacity reduction and the appropriate use of deductibles and coinsurance. On the other hand, any public utility approach which controls entry into the field can come into conflict with encouraging the growth of prepaid delivery systems (see Chapter V, Section B for examples of how existing Certificate of Need controls inhibit prepaid delivery systems). With proper attention this conflict can be minimized, and we will suggest a number of methods in this report to avoid inhibition of alternative delivery systems.

Note that if policies to directly restrain demand were successful, then supply constraints on demand would be unnecessary. Thus if hospital demand could be reduced directly, then direct reduction of excess hospital capacity would not function as a supply constraint on demand. Rather it would simply retire idle capacity so that remaining capacity was used more efficiently. Facing reduced demand, hospitals could not expand and additional regulatory controls would not be necessary. Thus to the extent that consumer and provider incentive approaches can successfully curb demand directly, the tendency of direct capacity reduction to drive health care policy toward a public utility approach is reduced.

In sum, direct reduction of excess hospital capacity will tend to move health care policy toward a public utility approach. It represents a cogent step toward placing a budgetary lid on the health care system. It does not conflict with consumer cost-sharing incentives and, with care, conflict with prepaid delivery systems can be minimized. Insofar as hospital demand can be simultaneously restrained by consumer and provider incentives and other methods, direct reduction of hospital supply will create less pressure toward a public utility approach.

## C. Local Side-effects of Excess Hospital Capacity Reduction

In addition to its general effect upon health care policy, excess capacity reduction will have a number of possible additional effects in areas where it is implemented. While some of these side-effects are advantageous, many are disadvantageous or will create political reaction from one or another constituency. In some areas the disadvantages may outweigh the advantages.

We have tried to make as complete a list of these side-effects as we can anticipate at this time. It can therefore serve as a starting check-list of considerations that planners and policymakers should weigh before deciding on a policy of directly reducing excess hospital capacity.

### 1. Possible Side-Effects on the Local Medical Care System

-- Ability to draw and hold physicians.
(If hospital capacity is reduced, physicians may not be drawn to the area, and some may leave, particularly specialists. In a community with few physicians, this may be a problem. In a community with a surplus of specialists, it may be an advantage. Unfortunately, given present public understanding, physician emigration makes good political fodder even when there is a surplus.)

-- Availability of alternate sources of inpatient care.
(If an entire hospital or service department in an area is closed, there must be another hospital or service department sufficient to pick up the patient load within a reasonable distance, and area physicians must have or be able to obtain privileges there.)

-- Availability of substitute ambulatory or other supportive service.
(Sometimes patients are unnecessarily placed in the hospital because supportive services -- ambulatory surgical centers, pre-admission testing, home health care, etc. -- are not available. Capacity reduction can create powerful pressure to use these less intensive services more efficiently. But they cannot be used if they are not there. Unfortunately, there are no good data to provide criteria for what levels of service should be available. The best approach may be a survey of hospitalized patients to determine which absent services are causing how many patients to be hospitalized unnecessarily -- see Chapter IV, Method 6. Note that in the absence of capacity reduction, the provision of such supportive services may increase hospital expense rather than substitute for it, because there are few incentives to use such services now and the hospitals will try to fill any empty beds they might create.)

-- Quality of care.
(Closure and consolidation of hospitals and service departments should improve quality of care because professional skills are more easily maintained with adequate patient flow. However, departments can become too large, so that impersonality and bureaucratic snafus set in (ref 41).)

-- Continuity of care: the full-service hospital ideal.
(If unnecessary service departments are closed, obstetrics may be consolidated into one hospital, psychiatry in another, etc. The ideal of the "full-service hospital" may go by the board. In fact, this ideal represents more the aspiration and ambition of hospitals, honored in the breach, than reality. Very few small hospitals are full-service, and most community hospitals leave many specialized services to the large teaching medical centers. We would suggest shifting the ideal to the "full-service area," and assuring adequate transportation among different levels of service, should patients encounter complications requiring higher intensity care.)

-- Conflict between regulators, providers and the community.
(Excess capacity reduction may encounter strong political reaction, even to the point of provoking hospital employee union and/or provider strikes. Skillful use of the technical and public relations tools suggested in Chapter IV and V, and skillful timing of implementing reduction may avoid or minimize these problems.)

-- Barriers to innovators due to the regulatory process and to possible cartel behavior.
(Regulatory agencies are vulnerable to influence or capture by existing producers, who try to discourage innovative competitors from entering the field (ref 39). The inflexibility and administrative delay of

regulation can also inhibit innovation. It is not clear that there is any good solution to this problem, but with attention and care in designing and administrating regulation, it can be minimized.)

- Larger but fewer hospitals may try to use their increased patient base to justify and support excessive technology.
  (Small hospitals cannot support overly specialized technology. If capacity reduction results in consolidating hospitals into larger but fewer institutions, each hospital may try to use its increased patient base to support an excessive number of high intensity service departments. This can be controlled by good population-based planning (see Chapter IV) backed up by expanded Certificate of Need controls.)

- Ability of teaching hospitals to generate "teaching material."
  (Teaching hospitals may complain that capacity reduction will threaten their supply of patients for physician training. There is no ideal answer. Most teaching hospitals always want more patients. They may or may not need more patients. One useful step may be to determine whether they are producing more physicians, particularly hospital-oriented specialists, than needed (see Chapter III, Table 1). Another step might be to bring the other hospitals in on the decision, knowing that the capacity not retired from a teaching hospital would be retired from them (see Chapter IV, Method 9).)

## 2. Possible side-effects on patients

- Queuing.
  (If supply is tightly constrained without simultaneous constraint on demand, patient queues will develop. Thus if direct reduction of hospital capacity is used alone to control excessive utilization and cost, without attention to demand reduction, non-emergency patients may have to wait a few days, and less urgent cases even a few weeks to obtain a bed. This problem will become more acute as the nation's physician supply increases -- expected to rise from the present 1.6 active physicians per 1000 population to 2.3 physicians per 1000 by 1990 (ref 74). It may be particularly acute in professionally attractive areas where hospital-oriented specialists tend to concentrate in excessive numbers. It will also be aggravated by the spread of comprehensive insurance. This is not a serious problem in terms of health if queues are well-prioritized, and queues can themselves discourage excessive use. But if queues became a major public inconvenience, they could become a serious political obstacle to effective reduction. Good scheduling practice by hospitals will help, but the key probably lies in concomitantly reducing demand and distributing physicians better as hospital capacity is reduced. Because there is so much idle capacity at present, patient queuing is unlikely to be a major problem in initially getting reduction underway.)

-- Hospitals more distant.
(If hospitals are closed, patients may have to travel further to get to the next hospital. This makes good political fodder, but should not be a technical problem if capacity is reduced with proper attention to alternate sources of care. There is no intent to close down the only hospital in an isolated rural area or in the ghetto. On the other hand, a thirty minute drive to the next hospital would seem no excuse for not retiring an unnecessary hospital; many patients travel this far right now even when other hospitals are closer.)

-- Loss of a religious or civic affiliated source of hospital care.
(Many persons wish to use hospitals of their own religious preference, or take pride in their denomination's sponsorship of a hospital. One useful tool to preserve institutional identities is to merge two hospitals and reduce their combined bed complement, rather than to force one sponsor out of the field. Often it is the sponsor's pride and institutional survival instincts, rather than patient preferences, which is the larger issue.)

-- Discrimination against underprivileged patients.
(Should queues develop in a situation of tight hospital supply, hospitals and physicians will have great freedom to pick and choose among patients, and they may prefer to serve "desirable" patients. Some of our interviewed experts voiced strong impressions that many private hospitals presently discriminate against various low income groups, accepting "interesting" and remunerative cases and "dumping" derelicts and other less desirable patients back on the county and city hospitals. Thus in a situation of queuing, it is not clear that certain underprivileged groups can compete effectively with the middle class for access. Per capita hospital use rates should be monitored across community population subgroups to assure that adequate equity is being achieved. The best solution is to avoid queues by constraining demand in ways not prejudicial to the poor. A second-best solution is to assure that traditional sources of hospital care to the underserved are not reduced inappropriately, just because they tend to be older facilities.)

-- Supportive care.
(Often patients who have no family, or whose family works, are kept in the hospital even though the patient could be treated at home if help were available. If capacity reduction tends to move these patients out of the hospital more quickly, these patients may suffer. This problem can be minimized by good planning of supportive services and by good medical judgment as to who belongs in the hospital for what reasons.)

### 3. Possible side-effects on local providers

-- Response to queuing.
(A tight hospital supply will put pressure on physicians to prioritize which patients need hospital care, and to move them in and out of the hospital efficiently. It will put pressure on hospitals to schedule patients and facilities more efficiently. This will represent some loss of convenience and require uncomfortable decisions for doctors

and hospitals, and they are unlikely to welcome it. If planners and policymakers are armed with the facts (Chapter I) that tight hospital supply does not threaten health, providers cannot confuse the convenience issue with medical safety. If reduction is staged incrementally with plenty of advance notice, providers can accommodate gradually to the changes.)

-- Loss of privileges at retired hospitals and service deparments. (Physicians holding privileges at a hospital or service department scheduled for closure will have to obtain privileges at another hospital if they do not hold joint privileges there already. This problem can be minimized by giving plenty of advance notice of closure, by reminding the remaining hospitals of their social obligation to absorb displaced physicians, and by paying attention to medical staff appointment patterns before selecting which hospitals and service departments to retire.)

-- Increase in hospital influence over physicians. (Presently hospitals compete for physicians (see Section A above). The more excess capacity the more the hospital must cater to its medical staff. On the other hand, if beds are tight and hospitals full, the hospital has less need for adding to its medical staff. Physicians may have to woo hospitals rather than hospitals woo physicians. This may reduce some competitive pressure on the hospital to add excessive technology. Also, the hospital can exert more organizational control over the medical staff, and this should improve quality. It may also cause political reaction by physicians.)

-- Regulatory inflexibility. (Most regulation involves rules and procedures which cannot always be flexibly adapted to every situation and which almost always take time, even when time is of the essence. All providers will have to live with this under a regulatory approach. By keeping regulation to the minimum necessary to do the job and as flexible as possible, the problem can be minimized but not avoided. For example, Medicare cost allowances depend on the size of a hospital; if the hospital reduces its capacity, its reimbursement rate could be reduced. Medicare should have flexibility to apply this rule gradually, so that a hospital reducing capacity is not financially disrupted.)

-- Forestalling economic or professional monopolistic behavior. (Concomitant with capacity reduction must be regulatory control over reimbursement and access to assure that the hospital who gets, say, the one obstetric unit in town does not arbitrarily raise prices or deny privileges to obstetricians not already on its medical staff.)

-- Capacity expansion by other hospitals. (Concomitant with capacity reduction must be regulatory control preventing other hospitals from expanding to take up the capacity retired.)

-- High technology development in physician offices.
(Supply controls, such as Certificate of Need and other measures, must be extended to physician offices to prevent physicians from expanding to take up service capacity retired in hospitals. For example, after a hospital was denied a CAT scanner, a physician on the medical staff installed one in his office across the street.)

-- Larger powerful hospitals may combine against small or new hospitals.
(Larger hospitals can often swing more political and financial weight than small or new hospitals. If these large hospitals see capacity reduction coming, they may ally together to make reduction fall on the weaker hospitals. Depending on the situation, the planner may welcome their help or have to fight it.)

-- Efforts to inflate utilization to avoid reduction.
(Hospitals may try to fill their beds with patients who really do not need to be there in order to appear occupied. If reduction focuses on excessive-utilization as well as on under-utilization, this problem can be minimized.)

## 4. Possible Side-effects on Communities

-- Local employment.
(Hospital employees and suppliers will be adversely affected by reduction of hospital capacity, particularly entire hospitals. If the hospital is a major employer in the area, the effect could be serious. Allowing plenty of advance warning and time for attrition to occur can help. Merger of hospitals or conversion of the hospital to other patient services -- e.g. nursing home care, alcoholism treatment, etc. -- can also help where appropriate or if compromise is needed.)

-- Community attractiveness to new residents and employers.
(A convenient hospital can be a selling point to employers or individuals considering relocating. If capacity reduction is implemented with an eye to availability, this should not be a major problem.)

-- Community pride and convenience.
(Communities take pride in their hospitals and want all services as convenient to them as possible. Since taxes and insurance spread the cost of excess hospital capacity and make it less visible, the community has little incentive to welcome capacity reduction. Raising public awareness, and measures to shift the cost of excess capacity back to the community responsible for it (see Chapter V), can help make capacity reduction more acceptable.)

### 5. Possible side-effects on regulators

-- Coordination of fragmented regulatory authorities.
(Regulatory authorities hitherto independent -- licensure, rate setting, Certificate of Need, insurance regulation -- will have to be coordinated together if excess hospital capacity reduction is to be successful. Capacity reduction provides a visible organizing focus for such coordination, which is needed in any event.)

-- Shift in emphasis from regulation of individual medical transactions to larger system constraints.
(Regulation has tended to focus on the cost, necessity and appropriateness of individual medical transactions. Excess capacity reduction will shift the focus to controlling supply and overall resource "lids." Regulatory tools will be drawn together to support control of these larger performance goals.)

-- New incentives and pressures on regulators.
(If discipline in the health care system is shifted more to regulators, they will become more enmeshed in the political pressures of the system. Incentives will be needed to assure that regulators perform well and do not degenerate into pro forma activities.)

## D. Conclusions

1. The savings and costs of excess hospital capacity reduction will vary greatly from community to community. Crude estimates suggest that an overall 10% reduction in the bed rate (and the labor and capital assets associated with these beds) per 1000 persons might produce average annual savings in per capita hospital expenditures of roughly 8% if whole hospitals are retired, roughly 2% to 4% if service departments are retired, and roughly 0.5% to 2.5% if individual beds are retired. A 20% reduction in bed rate would roughly double the savings. These savings will eventually be offset by inflation in the intensity of the remaining beds unless capital flow into the hospital system can also be appropriately constrained.

2. There are many other side-effects -- such as non-availability of alternate sources of hospital care, dependency of the community economy on hospital employment, political conflict, etc. -- which may outweigh or compromise the financial and other advantages of reducing excess hospital capacity in some communities. It should especially be noted that if direct reduction of hospital capacity is used alone, without concomitant policy attention to constraining demand, patient queues may develop in areas of high physician concentration. While not a problem of health (unless queues allow discimination against underprivileged patients), burdensome queuing may become a political obstacle to effective capacity reduction.

3. Significant direct reduction of excess hospital capacity, because it represents an external constraint on hospital supply, will tend to drive the nation toward a public utility approach to containing health care costs. In deciding whether to adopt a policy of excess hospital capacity reduction, policymakers must decide whether they wish to contain health care costs (2) by emphasizing restructuring of the private health care system to restore market discipline, now nonexistent, or (2) by imposing public utility controls as a substitute discipline, or (3) by some consistent combination of both. The best combination is now NOT KNOWN, and represents as much a value judgment as a technical judgment. The more hospital demand is restrained, as well as supply, the less pressure direct reduction will create toward a public utility approach.

4. Excess hospital capacity reduction is a constructive incremental step toward a public utility allocation approach, which would place a controllable "lid" on the overall budget and resources available for health care. Because it focuses on a few large, potentially controllable parameters which govern the behavior of the health care system, a public utility allocation approach may effectively contain costs. In contrast, present piecemeal public utility controls trying to regulate the price and necessity of every individual medical transaction are unlikely to ever work well.

5. Excess hospital capacity reduction need not foreclose on consumer market strategies to contain cost. It is consistent with the use of appropriate deductibles and coinsurance as consumer incentives. With careful explicit attention to details when designing policy, it need not inhibit the growth of prepaid alternative delivery systems; however, if this attention is neglected, it could be very inhibitory to alternative delivery systems. Thus, with care, all three major health care cost control strategies that might work -- consumer incentives, provider incentives, and a public utility "lid" -- could be pursued simultaneously. The two market strategies could provide very supportive pressure for excess hospital capacity reduction.

## Chapter III

## CAUSES OF AND PAST EXPERIENCE WITH EXCESS HOSPITAL CAPACITY

This chapter addresses two questions:

- What are the causes of excess hospital capacity?
- What has been the experience with previous efforts to reduce excess hospital capacity?

The answers to these two questions will tell us something about how excess capacity might be reduced and how difficult and demanding the effort will be.

### A. Causes of Excess Hospital Capacity

In Chapter II, Section B we briefly reviewed the underlying causes of health care cost escalation. We noted that the health care system performs the way society has structured and rewarded it to perform, and three basic structure and incentive factors leading to cost escalation were identified. In this section we elaborate on these three factors, and then cite additional structure and incentive factors which have led hospitals to escalate costs by excessively increasing capacity.

The three basic factors producing excessive health care cost escalation are as follows (ref 36):

- Indefinitely expansible style. The nature of a system's product is one of the most important structural elements. The quality, quantity and style of medical care are indefinitely expansible. The medical care system can legitimately absorb every dollar society will make available to it. The probabilistic and uncertain nature of both health and medical science implies that medical need is virtually inexhaustible even though illness rates are reasonably fixed. Providers can always try to provide ever greater safety margins for treatable patients, treat more and more hopeless patients, and screen for less and less probable diagnoses. For example, why perform \$50 of laboratory tests to be 95% sure of a diagnosis, if \$250 of tests will provide 97% certainty. Or, if a patient's condition is otherwise hopeless, why not perform an operation with a one in a thousand chance of success. Or, if an annual physical is good, why isn't a semi-annual physical better. Physicians already give themselves and their families 30% more care than the national average, and inventive American science and technology can endlessly elaborate the possibilities. While the medical care system is too large and complex to respond instantaneously, eventually the final check on what gets done is the dollars available.

Elaborate medical care is not necessarily bad nor unnecessary (and consequently will not be curtailed by controls aimed at bad or unnecessary care), but it does rapidly run up against the law of diminishing marginal returns. The first few dollars invested in medical care -- for immunizations, setting broken bones, etc. -- are very effective in improving health. But it becomes increasingly more difficult and expensive to make similar health gains as we spend more. Beyond a certain point all the additional tests provide little extra safety margins, the heroic measures only prolong the coma and postpone the inevitable, and medical care even begins to produce complications from its own complex interventions.

-- Strong misdirected incentives. The incentives on providers in the present medical care system are powerfully skewed toward specialized, technological, high cost care. The following examples illustrate some of these incentives. Peer reputation is a powerful motivator in most professions, and the physician gains far greater peer (and public) prestige practicing highly specialized, technological care than practicing general primary medicine. Financially, specialty work returns significantly greater income per hour than primary care, and fee-for-service rewards the provision of more services and more expensive services. Structurally, the fragmented nature of the medical care system creates "externalities" among the independent provider units (i.e. costs and savings do not necessarily accrue to the provider who creates them), leading to uneconomic behavior; for example, because the hospital is a free good to physicians, they tend to overuse it in treating patients. Educationally, the physician is trained in medical centers engaging in highly specialized secondary and tertiary care, presenting role models he will be professionally socialized and rewarded to follow. Ethically, the provider is bound to do all he can for each patient he accepts. Legally, physicians feel that malpractice doctrine seems to assert that, in event of an untoward result, the physician had better be able to demonstrate he performed all standard (whatever the court defines this to be) procedures even if he believes them excessive and unwarranted. Thus, unless altered or checked by limited financing, these incentives should lead physicians toward elaborate, specialized, high style practice which helps the few at great great expense rather than lower cost, lower style medicine which helps the many.

-- Third-party reimbursement insurance. The widespread extent of private and public third-party reimbursement health insurance, well over half of which appears quite comprehensive, provides almost open-ended financing to the medical care system. The patient (first party) and provider (second party) control the cost and use of services, but the bill is paid by a third party -- the insurer -- who is committed to reimburse whatever covered services are done. The consumer, once his premium has been paid (and to the extent that he does not have to pay additional co-payments at the time of service), has every incentive to receive benefits that may help him; the provider has every incentive to render them. The insurer, public or private, risks the wrath of both the consumer and providers if he interferes. To control expenditures under third party reimbursement health insurance, the insurer would have to intervene in virtually every individual medical transaction to judge its cost and appropriateness, a questionable role for a financial agent and a task at which not even public insurers have succeeded. (Thus Canada with universal public health insurance of the third party reimbursement type has cost escalation comparable to the United States with its mixed public-private insurance system, even though Canada has tried virtually every control proposed for the United States.) With an estimated 80-90% of Americans having at least some public or private health insurance, and well over half rather comprehensively covered, the medical care system has almost a blank check for its activities.

These three factors already account for most of the excessive cost escalation and maldistribution of the medical care system. With insurance providing open-ended financing for the system to follow its incentives toward the high cost end of an unlimited medical spectrum, cost escalation is obvious. Moreover, since providers can settle in any professionally attractive area of their choice and find or create a specialized niche in the medical spectrum for which insurance will pay, the result is excess concentrations of specialists in the attractive areas and shortages of physicains in others. To give some idea of the unlimited potential for costs to escalate, it should be borne in mind that American science and industry are able to endlessly elaborate the technology of medicine, which creates further specialized areas of practice requiring ever more physicians for fewer patients. Moreover, the U.S. is now over-producing a vast number of new physicians (much as it did for hospitals under Hill-Burton), each of whom will generate at least $100,000 in additional services (at today's prices) which insurance will have to absorb. The number of physicians per 1000 persons is expected to increase 50% by 1990, and of even more concern for excess hospital use, the number of surgical specialists per 1000 persons will increase 80% (see Table 1). Given the presence of even more comprehensive insurance, these physicians are no more likely to be evenly distributed than at present. The areas with excess concentrations of hospital-oriented specialists will thus be under even greater pressure to build hospital beds.

TABLE 1: PROJECTED NUMBER OF ACTIVE PHYSICIANS PER 1000 POPULATION, BY SPECIALTY, 1970-1990

| | 1970 | 1980 | 1990 |
|---|---|---|---|
| All Physicians | 1.59 | 1.97 | 2.37 |
| Surgical Specialists | .44 | .61 | .79 |

Source: ref 74

To the three general factors above must be added some additional structure and incentive factors specific to hospitals.

-- Hospitals are dependent on physicians for patients, and therefore compete for physicians rather than for patients directly. Financial viability and the stability afforded by financial growth, is a basic incentive of most organizations. For hospitals, revenues come primarily from patient care. The hospital is dependent on its medical staff for both patients and the supervision of care. But the physician medical staff is actually independent of the hospital. Thus hospitals appear to basically compete for doctors, and can be expected to do whatever is necessary to attract them. If the physician wants a bed, the hospital will do its best to have one available; if the physician wants to do cobalt therapy, the hospital will try to have a unit for him. This pressure to cater to physician interests is thus a strong incentive for hospitals to increase both size and intensity of the hospital.

-- Each of the constituencies of a hospital has strong incentives to increase bed capacity and the elaborateness of services offered. Prestige and reputation of the hospital are powerful incentives to hospital administrators, their boards and sponsors, and communities. Prestige and reputation apparently accrue from size of the hospital, reputation of the medical staff, and the elaborateness of services offered. Hospitals appear to compete with each other over all these aspects. Powerful individuals -- board members, donors, community leaders -- for whom the hospital is a symbol and avocation, can easily become personally invested in these aspects. Additionally, administrators find building their hospital program professionally rewarding, and size can add financial stability if it can be financed. Hospital employees want more secure jobs, and employee unions want more jobs; both desires are furthered by capacity expansion. The community tends to want high quality services, all immediately available near home; it enjoys both the prestige of its local hospitals and their economic impact on employment. In the absence of patient outcome monitoring, all these incentives are reinforced by the tendency of physicians, hospitals, and the public to equate quality with high style.

-- The hospital and the community are largely insulated from the cost consequences of decisions to increase hospital capacity excessively, because hospital care is the most comprehensively insured type of health care. Roughly 90% of all hospital expenditures are paid by third party payers: private insurers, Medicare, Medicaid, and other public assistance. More than half of this hospital coverage is very comprehensive, with relatively little deductibles or coinsurance to the consumer. The premiums for this insurance are seen only very indirectly by the consumer. In the case of private insurance, 70% of the premium is picked up by employers, and Medicare and Medicaid are almost totally subsidized by taxes. These financing mechanisms thus tend to spread the costs of hospital care over all employees and taxpayers, not just those in the community where the costs are incurred. If a community or hospital allows its capacity to increase excessively, the operating costs generated by this excess capacity can be passed on to third parties, who in turn will pass them on to employers and taxpayers often far beyond the bounds of the community. If decision-makers do not bear sufficient direct cost-responsibility for their decisions, they will always decide for more.

- Population shifts, especially the move from city to suburb, are aggravating the growth of excess hospital capacity. Excess capacity results not only from the expansionary incentives on existing hospitals. These same incentives lead them to hang on even when the patient population is moving away. A frequent pattern is that hospitals were built in the center city when the population there was growing. The population has now begun its flight to the suburbs, and suburban hospitals are being erected. But the hospitals in the center city do not close. They admit less severe cases, keep them longer, treat them more intensively, engage in highly specialized services, run at lower occupancy and higher prices -- whatever it takes to stay in business.

Taken together all these factors create a veritable engine to increase hospital capacity. In their efforts to attract physicians, improve financial strength, and enhance prestige as well as to build quality patient care, each hospital will attempt to expand its available beds and have the latest technological equipment. If one hospital sets up a prestigious service, such as cardiac surgery, no other hospital will want to be without one for fear of falling behind or being less attractive to physicians. The dangers are real. If an individual hospital does try to exercise stringent control over use and capacity, it will hurt its financial base and may antagonize physicians into using other hospitals, further jeopardizing its financial base. If several hospitals voluntarily try to exercise restraint but one of them does not, it is usually the case that that one improves its position at the expense of the others. Thus hospitals tend not to buck these pressures. The cost can be passed on to third parties, so there is little restraint. And the community, equating quality with prestigious high-style services and desiring all these wonders close at hand, is all too ready to accept or even encourage expanded hospital capacity because it does not really feel or bear the full cost consequences. The incentives to increase hospital capacity excessively are obviously very powerful, and it will take equally powerful measures to alter or counter them.

## B. Experience with Previous Efforts to Reduce Excess Hospital Capacity

Given the powerful incentives on hospitals and communities to escalate hospital capacity, and the poor understanding of the public about the connection between capacity and use and cost, it is not surprising that serious efforts to reduce existing hospital capacity are relatively recent, or that they have had only mixed success. We found it difficult to uncover organized efforts to reduce hospital capacity, suggesting both that there aren't too many of them and that those who are engaged in them are relatively unaware of each other's efforts.

Sharing of these experiences will permit us to build on previous efforts and can provide generalizable insights. As a start, we briefly summarize some of the more illustrative examples below. Much of our information is based on interviews with involved experts. We sought concepts and "big picture" impressions rather than details. Time did not permit us to verify all details, and we apologize for any factual errors.

England. Some 95% of British hospitals are government owned. They are organized into some 90 local jurisdictions, called Area Health Authorities. Each Regional Health Authority determines area health plans and budgets for all lower authorities. The Areas assess needs and administer the budgets of local providers. Physician specialists with hospital privileges are salaried employees of the hospital, and have always been subject to the jurisdiction of the Area and Regional Authorities. (Under the new 1974 reorganization, primary physicians and other services are also now subject to these authorities.) Thus, in principle, England has had complete financial and administrative control over not only its hospitals but its hospital medical staffs since 1947. In 1962 the Ministry of Health announced plans to reduce the acute bed rate to 3.3 beds per 1000 by 1975, and to even out the great variations in bed rate from one region to another. With their staggering degree of authority over hospitals it would have seemed possible for the British to directly reduce unwanted hospital capacity rather straightaway.

In fact, for political reasons we do not wholly understand, the British have only been able to modestly reduce existing capacity. Rather, they have apparently proceeded mainly by a combination of tacit moratorium and attrition. Over the last ten years very few new hospital facilities have been built, and the stock of acute hospital beds has been reduced about 10% mainly by closing out obsolescent facilities. In the meantime the population has grown by about 5%, so that the average acute bed rate is now reduced to somewhat less than 4.5 beds per 1000 population. The moratorium approach has more frozen in than evened out differences in acute bed rates among the hospital areas, and bed rates vary from 2 to 6 acute beds per 1000 persons.

One observer remarked that since no scientific criteria for bed rates has achieved any consensus, providers and communities vigorously defend the status quo against reduction; thus this year's budget is set equal to last year's budget with an addition for inflation plus an "allowance for scandals," e.g. a small reserve of money to throw into "cause celebré" situations. The result is that hospital distribution patterns set when the national health service was instituted in 1945 persist to this day. However, despite a 30% increase in admissions, the queue (i.e. the number of people waiting for hospital admission) has not appreciably changed in 10 years. And the British have held medical care cost escalation to only slightly more than their general inflation. This cost control would appear more the result of controlling intensity capacity by limiting capital budgets than of controlling bed capacity.

Ontario. This Canadian province started attempting to reduce hospital capacity in 1974. The original Canadian Hospital Insurance Act of 1958 covered virtually all Canadians for virtually all hospital services. (In 1968 physician care was added.) The insurance is administered by the provinces. In return for following federal guidelines, the federal government pays the province roughly 50% of hospital operating costs and provides grants of $5000 per bed for any hospital construction approved by the province; thus the federal obligation is open-ended. The province and community also contribute capital grants for construction. Most Canadian hospitals are private and nonprofit, as in the U.S. However, the local community is such an important source of capital for hospitals via the local property tax, that the vast majority have at least one municipal representative on their board. The province approves each hospital's operating budget and pays 90%. The hospital is allowed to collect the other 10% in patient charges. Depreciation is allowed on equipment but not buildings. The province can therefore, in principle, stop any buidling by refusing to approve it for capital grants, and stop any piece of equipment by refusing to pay for it in the operating budget.

Per capita hospital costs and use rose rapidly from 1959 on; as rapidly or more so than in the U.S. By 1975 the Ontario province health budget was $3.5 billion, one third of the entire provincial budget. The next largest item (social welfare) was $1 billion. The federal government has put all the provinces on notice that it wishes to end the open-ended nature of federal sharing and switch to fixed per capita formula payments to the provinces. The provinces are resisting, particularly because physician payments are open-ended to the province and have not been successfully controlled.

In 1973 the province felt compelled to reduce the health budget by $50 million. It decided to accomplish this by reducing bed capacity (Ontario then had in the neighborhood of 40,000 beds and 8 million people.) The bed rate standard was officially lowered from 5 to 4 beds per 1000 population, with intent to eventually go to 3.5 beds per 1000 in the unspecified future. (Intentionally or unintentionally, the talk of an eventual 3.5 bed rate has the effect of discouraging areas with less than the present standard of 4 beds per 1000 from trying to move up to 4 beds). The beds were to be closed by refusing to support them in the hospital budget. The plan called for closing 1500 beds the first year and 1000 beds in each succeeding year until the target was achieved. The province ministry would set district goals, decide which hospitals should close entirely, and bargain with the district health planning council (these are presently set up only for the larger districts) and providers on how to achieve the remaining bed reduction. The ministry would approve any reasonable district plans, and make the decisions itself if a plan could not be produced.

The plan was announced by the ministry and, according to one observer, "all hell broke loose." The ministry asked some 36 hospitals to reduce capacity, including 9 hospitals which were asked to close entirely. The Ontario Hospital Association, the private trade association of Ontario hospitals, angrily criticized the ministry's plan and the methods by which it had decided which hospitals to close. The Association argued that the plan could not be justified as promoting efficiency, that it was a straight economy move which would result in lower quality and service, and that therefore in the absence of defensible methods it was only fair to cut capacity equally across the board at all hospitals. We could not uncover hard figures as to how many beds and hospitals were actually closed in 1974. Apparently there was slippage from the 1500 bed goal; perhaps 1000 beds or so were actually closed.

In 1975 the ministry decided to back off because of the strong public reaction, and little action was taken. But mounting costs and increased taxes began to create a public climate of support for belt tightening generally and in the hospital sector particularly. Newspaper editorials and other public expressions gradually became supportive of the ministry's efforts.

This year the ministry has renewed the effort. The ministry designated 10 hospitals for closure, one a 300 bed public hospital and the others smaller hospitals of 40 to 50 beds located within 10 miles of an adequate facility. The ministry also set a goal of 2000 beds in other hospitals to be retired. Again the process is the same. The ministry sets district bed goals, designates which hospitals are to be closed, and gives the community two to six months to come up with an acceptable plan for how beds will be retired in the remaining hospitals to meet the district goal. Prior to identifying the hospitals to be closed, the minister of health met with 200 hospital board chairmen and administrators and then conducted twelve district meetings, all to explain the ministry's plan. The hospitals to be closed were then privately approached and notified of the ministry's intent. Three of these hospitals are now suing the ministry.

We asked our Canadian experts what factors appeared crucial and what they might do differently if they were starting over. Our experts unanimously agreed that commitment by the politicians is the most essential factor. Our experts all felt that much more time (6-9 months) and effort should have been spent on educating the public, the communities and the hospitals on the reasons for the reduction, showing the costs involved and justifying the methods to select hospitals for closure. There should have been more discussion and more close working with a variety of local leaders and hospital association leaders, explaining what the ministry felt it had to do and soliciting the suggestions of these leaders how to do it. The ministry might have done better to promise the communities other needed services in return; thus if x dollars could be taken from the provincial hospital service budget, part of this could be used to finance ambulatory or geriatric or social services in the affected community.

New York State and New York City. As early as 1964 this state became concerned about the increasing proliferation of hospital beds, and passed the first Certificate of Need law, requiring state approval of new additions to hospital capacity. By 1971 the state realized that its health care costs were still out of control, and moved to strengthen its control over hospital reimbursement by enacting a prospective reimbursement formula in its Medicaid program. The formula limits the annual increase permitted in hospital reimbursement. Since by state statute Blue Cross associations in New York must follow the same reimbursement principles as Medicaid, this formula effectively applies to over 50% of hospital reimbursement in the state. The commercial insurers would also like to come under these reimbursement principles, and the state health and planning agencies would welcome this. But so far the legislature has not been inclined to require that commercial insurers come under these reimbursement principles.

In designing the prospective reimbursement formula, the state built an occupancy adjustment factor into the formula, such that if a hospital had less than a minimum occupancy, its reimbursement would fall. For example, if occupancy of a hospital's obstetrical beds were less than a specified 60% minimum, the per diem reimbursement would be set as though its occupancy were 60%.*

The result of this reimbursement formula has been that hospitals have voluntarily retired some 6000 beds since 1972 in an effort to avoid losing full reimbursement. Since the formula calculates occupancy on the basis of licensed bed complement, this means these hospitals applied for and were granted reductions in their licensed bed complements by this amount. Some of these hospitals actually retired entire service departments. On the other hand there is also some evidence that length of stay may have stopped declining, as hospitals strain to keep their occupancy up.

The state has also strengthened its licensure requirements and applied them more vigorously. It set minimum size standards on obstetrical and pediatric departments, and requires any department less than this size to close. By rigorously enforcing existing medical and plant safety standards in its licensure law, it has reportedly closed some three dozen hospitals statewide over the last four years. Most of these were small under-occupied hospitals which had already been driven to the wall by the reimbursement controls.

The continuing financial pressure on the state has kept the pressure for health care cost control high. This year the state is beginning two new types of controls. First, it requested and received legislation last year to close any hospital deemed by the Commissioner of Health to be "unnecessary." This greatly strengthens its licensure revocation powers, for the state need only demonstrate a hospital is unnecessary rather than show it violates medical or physical plant safety standards. The law permits the hospital to appeal the Commissioner's decision in the courts, but it must nevertheless close 30 days after being notified by the Commissioner, even if the decision is being appealed, and may be reopened only if the decision is reversed by the court. (There are doubts about the constitutionality of this law; it has not yet been tested in court.) Second, the state is adding minimum patient volume standards in the reimbursement formula for certain high cost services, analogous to its minimum occupancy formula method. If for example an open heart surgery unit performs less than a specified minimum of 100 procedures annually, its reimbursement per procedure will be set as though it did, resulting in a lower reimbursement. So far, patient volume standards have been set for open heart surgery and renal dialysis, and standards for other services are under consideration. Because of the nature of New York's prospective reimbursement formulae, these standards will not become effective until 1977.

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* For example, suppose the hospital had total obstetrical costs of x, and had 2000 obstetrical patient days corresponding to 40% occupancy. Instead of reimbursing the hospital the full per diem (x ÷ 2000 days) for each obstetrical day, the state reimburses it a lower per diem (x ÷ 3000 patient days), corresponding to the minimum 60% occupancy.

The state has begun to exercise its new authority to close unnecessary hospitals this year. The urgent financial crisis of New York City has given it a special opportunity. Usually the state has to be cautious in putting pressure on excess capacity because the affected community strongly resists. In New York City the opposite is true. City leaders are urging the state to act; they say the state has the legal authority whereas the city does not. New York City currently has 5 acute hospital beds per 1000 population, ranging from 3 beds/1000 in Queens to 11 beds/1000 in Manhattan. The state has now designated six smaller, under-utilized hospitals in the city for closure on the grounds that they are unnecessary. Two of these hospitals, already hard pressed by reimbursement controls, folded immediately. It is not yet known whether the remaining four will challenge in court.

In a related development, New York City's local Health Systems Agency (HSA), the planning body, has developed a tentative list of some 30 hospitals it deems unnecessary, including the six designated by the state. (The Mayor has now requested the HSA to come up with plans for all hospitals, including the municipal hospitals). This list was somehow obtained by the press and given a big play in the newspapers. An unexpected result was that the creditors and vendors to the listed hospitals descended upon them, and are demanding immediate payment and terminating further credit. This action of creditors may force many of these hospitals to close before they can challenge the HSAs or the state's decisions. Interestingly, no hospital has challenged the HSA's contention that there are 5000 excess beds in the city; they have only challenged that their hospital is one of the excess ones.

The state has also frozen hospital reimbursement this year, allowing no increase. The hospitals in New York City then refused wage raises satisfactory to the hospital employees unions, saying they had no funds for it and proposing binding arbitration. The unions struck and attempted to have the state lift the reimbursement freeze. The state held firm. Apparently the fiscal pressure on the state was sufficient to outweigh the political pressure of the hospital employees unions. The unions have now agreed to binding arbitration. The imposition of a ceiling by the state has enormous implications: in the future, hospital management and labor will have to discuss trade-offs among wages, number of jobs, and capital equipment, placing counter-pressure on physician staff desires for more technology.

We have been unable to determine the success of the city government in controlling excess capacity in the city's own large (18 hospitals) municipal hospital system. Many of these hospitals are said to be under-occupied. But it is also said that the municipal hospitals, as the only ones reasonably available to the poor, have a special mission, and that if they aren't maintained the poor will go unserved. Apparently two new municipal hospitals are being built presently, and only recently and with great difficulty has the municipal system closed two or three municipal hospitals. The impact on the neighborhood economy and employment has been one of the chief sources of resistance. Our impression is that there is as much excess in municipal hospital inpatient capacity as in the voluntary and proprietary hospitals, and that despite its apparent authority the city government has found it very difficult to control or reduce excess in its own municipal system.

A critical concern to city and state planners is the backlog of Certificate of Need awards, granted earlier when there was less attention to controlling hospital capacity but not yet built because of tight capital markets and reimbursement. This backlog includes at least 5000 beds to be modernized (this usually means an increase in intensity) and 2000 new beds, not to mention a large number of specialized service facilities and capital equipment. Neither city nor state planners want this backlog to become reality, and they are now looking for ways to disapprove these awards.

Some useful observations may tentatively be drawn from the New York experience. First, Certificate of Need, upon which the state initially pinned its hopes, did not prove as successful as the state hoped. It only imperfectly stopped additions to hospital capacity, and could not be applied to reducing already excessive hospital capacity once it was in place. The state has found licensure and reimbursement controls far more useful than Certificate of Need to reduce existing excess capacity. Second, the potency of the state's reimbursement controls rests in the fact that it has broadened them beyond Medicaid to Blue Cross, thereby reaching 50% of all hospital expenditures. Presumably they would be even stronger if extended to commercial insurers and Medicare. Third, because hospitals have become so dependent on borrowing as charity has failed to keep up with their capital desires, state efforts to influence the actions of hospital creditors may have a potent effect on reducing excess capacity. Fourth, New York experts feel that their present controls are being exercised in too piecemeal a fashion, and are now seeking ways to draw together planning licensure, rate controls and Certificate of Need so that they can be exercised in a coordinated way. Finally, the best results may occur when there is strong mutual support between the state and the community.

Massachusetts. This state has attempted to use its Certificate of Need authority to control both hospital and nursing home growth. This experience has been reported in detail elsewhere (ref 42,43), and we make only a few brief observations here. First, to date the state has not attempted to use licensure or hospital reimbursement controls in any major way. Second, it has aggressively used its Certificate of Need authority. It has even conditioned granting of Certificates to hospitals for certain services upon reduction in certain other services of the hospital. The result has been not only to hold hospital bed capacity over the last few years, but to slightly decrease beds. The strong support of the governor was reported as an essential factor in this. Third, in order to guide its stringent Certificate of Need awards, Massachusetts is the first state to move away from demand-based planning to more population-based planning methods (see Chapter IV, Sections A & B). Massachusetts is now setting reduced hospital use goals for 1985 of 1000 patient days per 1000 population and setting reduced bed goals accordingly. Fourth, Massachusetts is now beginning to consider the use of hospital licensure and reimbursement controls to implement these planning goals. Whereas New York strengthened its regulatory controls first and is now seeking to tie them together by planning, Massachusetts strengthened its planning first and is now trying to garner the regulatory controls necessary to implement its planning goals.

Certificate of Need. First enacted by the state of New York in 1964, Certificate of Need laws have now been enacted by over half the states. Certificate of Need laws forbid a hospital, existing or new, from making a capital expenditure of more than (typically) $100,000 unless it obtains in advance a Certificate from the appropriate planning agency certifying that the facility or equipment to be acquired is needed. The new federal planning law (P.L. 93-641) now mandates all the states to enact Certificate of Need laws.

Despite this great enthusiasm for Certificate of Need and despite that it has been around since 1964, at the time of the federal law's enactment in 1974 there had been no rigorous evaluation of whether the law had worked. In a review of the research literature, O'Donoghue (ref 40) observed in 1974 that there was no convincing rigorous evidence either way that Certificate of Need had been or had not been effective in limiting the growth of excess hospital capacity.

Since that time one such rigorous study of Certificate of Need has been completed, the only one to our knowledge. Bice and Salkever (ref 44) using data from 1969 to 1972 (so as to observe the effect of Certificate of Need alone before reimbursement and other controls became common) report that Certificate of Need controls did indeed slow the growth in hospital beds but accelerated the growth in intensity per bed, so that capital inflow to hospitals (and hospital operating cost increases) remained unaffected. In other words, Certificate of Need did not slow cost-generating capital growth of hospitals; it just shifted it from bed-capacity to intensity-capacity.

Other useful but non-rigorous evaluations of Certificate of Need may be found in references 42, 43, 45 and 46. In particular, the Lewin study (ref 45) observed that in most states the disapproval rates for Certificate applications for additional beds were quite small (usually more than 90% of applications received a Certificate), that the disapproval rates for capital equipment applications were even smaller, and that the great majority of states and areas where Certificate of Need has been operative have hospital capacity now in excess of 105% of Hill-Burton need estimates.

*Wausau, Wisconsin.* In 1968 this town had two hospitals, a Catholic hospital of some 300 beds and a voluntary community hospital of some 125 beds. Both hospitals duplicated each other's services and were losing money, but both had started trying to add cobalt units. Community leaders and physicians finally felt something had to be done to stop duplication of services lest both hospitals run into serious financial problems. The solution finally proposed was to merge the two hospitals and consolidate services.

Two years were required to merge the two hospital boards. The newly merged board added an interesting bylaw: *that no member could serve more than two three-year consecutive terms.* Whereas some members of the old boards had been there twenty years, this requirement began to bring fresh blood onto the board. The new board also decided that a new hospital administrator should be brought in, so as to minimize jealousies between the two hospitals' administrative and medical staffs when the hard decisions on consolidation were made. The plan was to divide up various service departments in one hospital or the other, and eventually to build an entirely new hospital by 1978.

In the meantime, Employer's Insurance of Wausau, with head offices in Wausau and the largest health insurer in the area, had developed an innovative individual practice HMO plan with area physicians. The HMO started operation in 1972 and in two years had halved the hospitalization rate of its enrollees. While the enrollment constituted only 10% of the patient load at the two hospitals, the plan's hospitalization statistics made a strong impression on the new hospital board. The HMO utilization review procedures also made a strong impression on the physicians, even in their non-HMO practice. Moreover, as services were consolidated, it was found that less beds were needed. The combined operating bed complement fell from the original total of 425 to 350 to 315 to its present value of 284 beds. Using the HMO statistics as a guide, the board has now decided that the new hospital building, despite a growing community population, will be designed for a licensed complement of 261 beds.

This example shows that *the private sector can take the initiative in reducing excess hospital capacity, if it is willing to exert leadership and effort. It also shows that a well-performing HMO can exert an influence beyond its simple competitive effect, offering a comparative standard against which to judge the traditional system.*

Other Examples. We obtained scattered information on other examples, some of which seemed to merit passing on because of special features about them. An interesting example is that long-term hospital beds are being steadily reduced in the United States. The bed rate per capita for long-term Federal hospital beds has fallen by almost one-third in ten years. The powerful incentives to maintain and expand short-term beds -- competition for physicians, desire of sponsors and communities for prestige and convenience, divorcement between the payers and decision-makers -- apparently operate less strongly on long-term hospital beds. On the other hand, the Federal government has been trying to close eight short-term Public Health Service hospitals for six years, with little success despite its apparent absolute authority. The maritime unions have resisted the move (they obtain medical care there), as have a number of influential Congressmen for a variety of reasons. Nor has the Federal government made any particular effort to control the growth of the Veterans Administration hospital system (only 15% of whose patients have service-related injury or illness) nor to relate the V.A. system to local planning efforts.

An innovative local example is provided by two adjacent center city hospitals in Minneapolis, one a private hospital, the other a highly regarded public general hospital. Both hospitals had announced plans to exapnd, despite the shift of population to the suburbs. Largely at the initiative of a local "good-government" citizens organization, there was strong "persuasion" for the two hospitals to cooperate. A rather unique solution was arrived at. The combined bed complement of the two institutions was slightly decreased from the former total, but the bed complement of either hospital was left floating. A needed new building was built as the core of the public general hospital, and a new jointly-operated, shared-service facility was built between this core building and the private hospital. The public and private hospital can negotiate how much space each gets in this shared facility, and this can change over time as long as total beds remain fixed.

Another innovative example is a formerly free-standing 40 bed rehabilitation hospital in Minneapolis. This hospital was an early pioneer of rehabilitation in the state, and vigorously educated general hospitals to include rehabilitation services in their program. It was so successful that it found its own patient census beginning to fall, and it came under severe financial pressure. The rehabilitation hospital then negotiated to turn itself into an ambulatory rehabilitation hospital wing attached to one of the community hospitals, which would supply any inpatient beds needed. This negotiation was successful, and a new wing was built for the rehabilitation program at an under-occupied community hospital. The old free-standing hospital building was bought by the city to house its chemical dependency program. Thus the institutional identity of the rehabilitation program has been preserved, inpatient capacity was reduced, and existing capacity is used more efficiently.

These two latter examples show how flexibly the problem of controlling and reducing excess capacity can be handled when a little imagination is applied. We also learned of other examples interesting because of their varied sources of initiative. In addition to quiet efforts by local planning agencies, we found scattered examples of hospital capacity reduction, successful and unsuccessful, initated by insurers, voluntary organizations and hospitals themselves. In most cases, the hospital capacity reduced was a marginal amount which would not impact significantly on cost containment of the health care system generally. Nevertheless, case studies of these examples might yield much practical information about the problems encountered.

Two examples are worthy of attention because they represent potential sources of private initiative for larger scale efforts at capacity reduction. First, the large voluntary organizations which sponsor hospitals, particularly religious denominations, could have great impact should they become concerned with excess capacity. Perhaps the largest voluntary hospital sponsors are the Catholic orders. The Catholic hospitals have no unified voice; rather, independent authority rests in each order's mother house and its provinces (i.e. regional jurisdictional area of the order). Religious diocese officials can attempt persuasive leadership over the activities of the orders within each diocese (local jurisdictional area of the church), but do not have line authority over the order and its hospital activities. The Catholic Hospital Association, the private trade association of Catholic hospitals, has no power to set binding policy but can issue advisory positions. Other than support for planning generally, the Association has taken no official position on excess hospital capacity. Thus effort has been sporadic, and varies greatly by religious order and diocese. The New York City diocese has been particularly active, and has obtained closure of some two or three hospitals and several service departments in other hospitals that were felt to be unnecessary. (The abortion issue has reportedly made closing excess obstetric units more complicated.) The larger orders operating many hospitals are reportedly becoming much more careful about hospital capacity, but many orders are still operating under the old philosophy that more is better.

A second example of private effort is a study now underway by the California Hospital Association, the private trade association of California hospitals. The study is looking at control of hospital costs, and the problem of excess hospital capacity has been explicitly raised as one of the issues. While the Association's membership is hardly unanimous on the issues or what should be done, there is apparently sufficient feeling there that some sort of control is necessary and inevitable, and it would be better for the hospitals to figure out how to do the controls right than to have a bad system imposed on them by government. The study is being financed by the Social Security Administration.

## C. Conclusions

1. The incentives on hospitals to expand capacity excessively are very powerful. Competition for physicians, competition for reputation, powerful community interests, divorcement of decision-making from cost responsibility at the community level, and an unlimited pot of insurance dollars, all fuel the drive for excess capacity. Capacity reduction efforts will have to be quite strong to counter or alter these forces.

2. Even where government has virtually complete authority, excess hospital capacity reduction of any significance has proven very difficult, with rather limited success. Only under extreme financial pressure has government found the courage to act, and public support has been very crucial to its success when it has had to resist provider pressure.

3. If their support can be obtained, the private sector -- community business and labor leaders (particularly donors, lenders and hospital board members) voluntary hospital sponsors, insurers and providers themselves -- have great leverage to help reduce excess hospital capacity. Capacity reduction will probably be most effective under joint public-private effort.

# Chapter IV

# IDENTIFYING EXCESS HOSPITAL CAPACITY FOR REDUCTION

This chapter addresses the question:

-- Which hospital capacity should be reduced?

No matter what strategy for capacity reduction is adopted, be it a direct strategy of reducing supply or an indirect strategy of discouraging demand, we will need methods to identify hospital capacity that should be retired. In the case of a direct strategy the need is obvious. In the case of an indirect strategy we will need criteria to assess whether the strategy is effectively reducing only capacity which should be retired or if it is missing the mark. We emphasize that in retiring hospital capacity, we are seeking to reduce not only excess beds, but excess service facilities, hospital employees, and plant and equipment assets. Planning goals must thus be stated in terms of all four measures of capacity: beds, service facilities, labor and capital.

We begin with an assessment of existing planning approaches and find that they are inflationary. A fundamental shift in planning methodology from "demand-based" need projections toward "population-based" need projections appears necessary. We then assess the existing technical tools to identify excess capacity. Within the context of population-based planning, we find them crude, needing considerable refinement, but adequate to begin. Finally we discuss the biggest gap found in current methods: although we can identify individual hospitals with underutilized capacity and can identify communities with excessively-utilized capacity, we are only poorly able to identify which individual hospitals and physicians account for excess use. We regard this problem as extremely serious. Unless it can be remedied, capacity reduction may introduce perverse incentives into the system whereby "fat" hospitals (with overly-generous admitting and discharge policies) trim off a little fat, and "lean" hospitals (with stringent admission and discharge policies and no fat to trim) get killed. Unless our methods allow us to identify and reward desirable hospital and physician behavior and penalize only undesirable behavior, a capacity reduction strategy could prove inequitable to providers.

## A. Current Planning Methods: Demand-Based

In a recent survey of hospital planning methods used by the states, Melum (ref 47) found that, with the partial exception of Massachusetts, every state used demand-based planning methods. Most of these methods were variations on the original demand-based method of the Hill-Burton program.

Basically, demand-based planning uses current levels and trends in service utilization to predict future utilization and bed need.* The demand-based method can be made quite complex and sophisticated (ref 47,48), although not necessarily more precise. Population and utilization rates can be disaggregated by age, sex and other demographic factors. Utilization can be further disaggregated by type of service (e.g. intensive care beds, pediatric beds, etc.), and estimates for technological advances can be included. "Need" studies can be conducted on suspected underserved population groups comparing their current utilization rates for particular services with the utilization rates "demanded" by better served population groups or with expert medical judgments of what the utilization rate should be. Utilization and supply are then projected for each disaggregated group, and the results summed to obtain community bed and service facility "needs."

Finding 1: The research evidence shows that demand-based planning methods, overwhelmingly the predominant method used by American health planners, are self-fulfilling and inflationary and promote inequities.

The demand-based approach to planning bed needs flies in the face of the last fifteen years of health services research. The fallacies in the assumptions of demand-based planning are readily seen from the evidence reviewed in Chapter I. The first fallacy is that current utilization ("demand") can be assumed a surrogate of "need." The findings of Chapter I show that hospital utilization has very little correlation with health risk or health status, but rather correlates much more strongly with hospital capacity. Under comprehensive insurance, use is determined far more by supply than by consumer demand. To our knowledge, no consumer demand study has been able to account for more than 15% of the observed variation in utilization rates on the basis of consumer demographic and health risk factors (ref 49). The second fallacy is that an increase in hospital capacity is assumed to have no effect on utilization. The well-established Roemer effect flatly contradicts this assumption. Building additional hospital capacity helps induce additional utilization which, in the absence of counter forces, then becomes the justification for that expansion -- a self-fulfilling prophecy. Not only is such planning thereby inflationary, it tends to concentrate capacity increases in areas where use and capacity are already excessive, aggravating inequities. The third fallacy is that "need" studies are assumed to have some single medically objective "right" answer. The research evidence shows that different medically acceptable practice styles produce variations in utilization rates of 100% and more. There is not one but a great range of medically "right" answers. The answer one gets will depend on which group of physicians is asked.

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* As a simple example, suppose a community of 50,000 population currently uses 1400 patient days per 1000 population. Current "demand" is then (50,000 persons x 1400 days per 1000 persons) or 70,000 patient days. Now further suppose that the population is growing 1% per year and the use rate is increasing 0.2% per year (these are approximately national average growth rates). In five years, the population will increase 5% and the utilization rate by 1%. Then future demand in five years can be projected as (50,000 x 105%) x (1400 days per 1000 persons x 101%) or 74,235 patient days. If we apply an average occupancy factor, utilization can be converted to bed needs. Suppose current occupancy is 75%, and it is desired to increase occupancy to 77% in five years. The current bed supply is given by (70,000 patient days ÷ 365 days per year ÷ 75% occupancy) or 256 beds. This is a bed rate of (256 ÷ 50,000 persons) or 5.1 beds per 1000 persons. Similarly, the future bed need is (74,235 patient days ÷ 365 days per year ÷ 77% occupancy) or 264 beds. This would be a bed rate of (264 beds ÷ 52,500 persons) or 5.03 beds per 1000 persons. According to this simple demand-based method then, this community with a current bed rate of 5.1 beds per 1000 persons would need 8 new beds in five years.

Despite the virtually conclusive refutation of its assumptions by a decade of health services research, the demand-based approach continues to dominate not only the practice but the theoretical literature of health planning. A recent review of the planning literature on bed need projection (ref 48) distinguished four general approaches of ever increasing complexity -- formula models, regression models, stochastic approaches, and simulation -- all predicated on demand-based assumptions. The review concluded by recommending its own simplified demand-based method. The preoccupation of planning theory and practice with demand-based planning methods, now known to be self-fulfilling and inflationary, suggests insufficient interaction between health services research and health planning. Planners and researchers may need to start reading each other's literature more.

A further, more speculative interpretation can be offered for the popularity of demand-based planning: it does not force the planner to challenge providers. The original federal Partnership for Health Act established comprehensive health planning as a voluntary process with no coercive authority. The planner could only influence providers by being persuasive and agreeable. Because the research evidence in Chapter I was neither so well-established nor well-known at that time, the planner had little technical basis upon which to challenge providers about excessive use and capacity, and of course the issue would scarcely be popular with providers. With providers enjoying powerful political clout and public esteem, with communities bearing only indirectly the financial consequences of capacity expansion, and with no objective standards to evaluate the planners' performance, the planner was in a no-win situation except to get along by going along. Since demand-based planning basically assumes that services currently provided by physicians and hospitals are a surrogate for need, there is no cause to seriously challenge providers in this approach. We do not suggest that the remedy to this situation is to give planners coercive authority to challenge providers (see Chapter V for alternatives). We do suggest that, since HSAs are largely inheriting the old CHP agencies and personnel, reeducation and updated planning tools may be in order.

The arbitrariness which demand-based planning has produced is shown by Hill-Burton bed need projections for various states (see Table 1). For example, the three Pacific states have lower than average bed rates, and by increasing their occupancy standards are trying to move even lower. The New England states have a scatter of low to high bed rates; most, but not all, are trying to decrease beds. On the other hand, a number of states have high bed rates and plan to go even higher; South Carolina, for example, has 5.2 beds per 1000 persons and plans to increase this to 5.8 beds. (Note, the variation in bed rates within states is generally greater than these variations among states, see Chapter I, Table 8.) There is no reason to believe and no evidence to support that people on the West Coast "need" 3.5 beds, people in New England "need" 4.5 beds, and people in Kansas "need" 5.5 beds, per 1000 population. The quantity and use of hospital beds at these levels is a matter of policy, not health.

TABLE 1. SELECTED STATE HILL-BURTON BED NEED PROJECTIONS

| State | 1975 Hill-Burton Existing Beds/1000 | 1980 Hill-Burton Needed Beds/1000 | 1974 AHA Existing Set-up Beds/1000 |
|---|---|---|---|
| United States | 4.51 | 4.00 | 4.39 |
| Washington | 3.64 | 2.49 | 3.33 |
| Oregon | 3.80 | 2.99 | 3.84 |
| California | 3.86 | 2.96 | 3.89 |
| Maine | 4.45 | 4.01 | 4.55 |
| Vermont | 5.00 | 3.53 | 4.78 |
| New Hampshire | 4.15 | 4.07 | 4.02 |
| Massachusetts | 4.77 | 4.77 | 4.57 |
| Rhode Island | 3.72 | 3.39 | 3.73 |
| Alabama | 4.93 | 5.31 | 4.64 |
| Kansas | 5.66 | 5.05 | 5.52 |
| South Carolina | 5.20 | 5.80 | 3.80 |
| South Dakota | 5.31 | 5.35 | 5.22 |
| Tennessee | 4.88 | 5.45 | 4.91 |

Source: Hill-Burton figures, from ref 21.
AHA bed data, from Hospitals JAHA Guide Issue (Aug. 1975).
State populations in 1974, from Statistical Abstracts of the U.S., 1975.

## B. Population-Based Health Planning

An alternative to demand-based planning is population-based planning. We shall discuss it here to show that there are sound, defensible alternatives to demand-based planning. Population-based planning is planning that sets goals on the basis of (comparably adjusted) population-based rates rather than demand-based rates. A population-based rate is an adjusted per capita rate, such as tonsillectomies per 1000 children, or hospital expense per person (i.e. a population figure appears as the denominator of the rate). While it may be some time before the nation is politically ready to accept population-based health planning in its pure form, we believe movement toward a more population-based approach is necessary and inevitable. After discussing the basic population-based planning approach, we will show in the next section how it can be combined with demand-based methods to identify excess capacity.

Population-based planning attempts to avoid the fallacies of demand-based planning exposed by research that (1) use can be equated to need, (2) that use can be considered independent of supply, and (3) that need studies have a single "right" medical answer. Instead population-based planning assumes (1) that need is best judged by the demographic and health risk characteristics of the population (not their usage rates), (2) that we know enough from empirical studies to translate population characteristics into general standards for utilization and capacity rates that are more than adequate to meet community need, and (3) that the purpose of need studies is to determine, within these specified overall standards, how best to allocate utilization and capacity to specific services and population subgroups so that maximum equity and health efficiency are achieved.

In its most primitive form, population-based planning works as follows: It starts with the conclusion drawn from the research evidence (Chapter I.H.1) that beyond some uncertain minimum (about 600-800 patient days and 2-3 hospital beds per 1000 population), overall hospital use and capacity are a matter of policy, not health. Therefore, if a suitable safety margin, adjusted for the health risk characteristics of the community, is allowed for, then planners and policymakers can arbitrarily (from a health standpoint) choose from within the range of medically acceptable practice a desired target set of utilization and capacity rates per 1000 population which then become the planning goals for the community.* (For example, in 1973 this type of planning goal was proposed in Massachusetts. The goal was 1000 patient days per 1000 population by 1978 and 800 days by 1985. These goals have not yet been accepted.)

Having chosen an overall target hospital use rate, this use rate must be distributed among the various types of services. Again the procedure is the same. The planner and policymaker go to the research data giving the range of acceptable medical practice for each specific service of interest. Taking into account the risk characteristics of their community, they select a set of specific target utilization rates for each service such that the overall target utilization rate is not exceeded. By then applying desired occupancy standards, the specific capacity targets -- e.g. so many coronary care beds, pediatric beds, obstetric beds, etc. -- are arrived at. By the "reverse Roemer effect" (see Chapter I, Section G), the target capacity rates, if achieved, will act as a forcing effect to achieve target utilization rates.

The reason for working from the top down (e.g. from an overall hospital use rate to specific service use rates) rather than from the bottom up, is that we know much more about overall rates than specific service rates. The research data on health and hospital use are much more statistically sturdy on overall rates than on individual service rates (see Chapter I and especially ref 28). We know for example that hospital use rates exceeding 600-800 patient days per 1000 population are more than sufficient to produce the optimum health levels achievable by well organized medical care. But as we work down to specific services there are fewer rigorous studies to guide us, and planning judgments become more subjective. For example, we are less certain how many of these hospital days should be intensive care unit days. The important finding that different types of beds are substitutable for each other (see Chapter I, Finding 3), protects us from reasonable errors in planning judgment, and also obviates the need for community health planning at too detailed a level. Except for extremely high cost services, such detailed planning is better left to individual hospitals. The population-based planning approach would aim more at setting overall use and capacity rates, and then monitoring per capita rates for utilization, capacity, and expenditures* to see that goals were achieved. Planners would work with community providers to negotiate ways to see that target rates were achieved without deterioration in health levels, and that the distribution of services across the community population were equitable. (Need studies would serve this allocative and distributive purpose, not determine overall target rates as in the demand-based approach.)

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* To illustrate, take the example from the footnote in Section A above of a typical community of 50,000 persons with a utilization rate of 1400 patient days, and a bed rate of 5.1 beds per 1000 population. (For simplicity, we assume this community has typical age, sex and other risk characteristics, so that such adjustments can be ignored for the moment.) The research evidence shows that for such a typical population the range of acceptable medical practice varies from an uncertain minimum of 600-800 patient days to an uncertain maximum of 1600-1800 patient days per 1000 population. Since the research evidence shows that comparable health levels are achieved anywhere within this range, then from a health standpoint the policymaker may arbitrarily choose any utilization rate standard within this range as the planning target for the community. If he is interested only in patient and provider convenience he might choose a higher rate, say 1500 patient days per 1000 persons. But if he is interested in cost containment, he will choose a lower rate, say 1300 patient days per 1000 persons or less. (He could equally well choose 1200 or 1000 days or less; all are equally safe from a health standpoint. He can choose arbitrarily on the basis of whatever is politically and pragmatically feasible to obtain.) At the specified occupancy of 77% a goal of 1300 patient days translates to 4.6 beds per 1000 persons. Thus this population-based assumption would produce a reduction in existing capacity down to 241 beds or less. This is in contrast to the increase to 264 beds projected by the demand-based assumptions in Section A above.

One important implication of the population-based approach to health planning is that it shifts the medical burden of proof, from those who would reduce hospital use and capacity to more reasonable (and economic) levels, to those who would increase it. Since the research evidence shows that high hospital use is not of itself an indication of health need, high use of itself can no longer be accepted as a justification of high hospital capacity. Rather, high hospital capacity would have to be justified by demonstrating that there was something medically different about a community which would preclude reduction to capacity levels used by more typical communities.

A medical analogy may illustrate the point. A surgeon may come before a medical audit committee and make medical arguments to justify each of his 100 most recent (primary) appendectomies. But suppose the audit committee has the laboratory report that 50% of the appendices he removed were not diseased. The audit committee knows from a wealth of empirical studies that a good surgeon removes no more than 20% healthy appendices. The committee then becomes properly more skeptical of this surgeon's justifications. It does not accept the fact that the use occurred -- that the appendectomies were performed -- as a justification of this use. The committee will study this surgeon's patients and practice more deeply and, unless more firm justification can be adduced, will work with the surgeon to reduce the number of healthy appendices removed.

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* We emphasize the conclusion of Chapter I, Section C that as long as health levels are maintained or improved, the final measure of planning effectiveness is the performance of per capita health care expenditures, not use or capacity rates.

In the same way, health planners can now draw on a wealth of empirical studies which show that, for comparable populations, just as excellent health levels can be achieved with hospital utilization rates of 600-800 patient days per 1000 persons as with rates twice that high. Therefore any claim that a community could not reduce its utilization (and corresponding capacity) from, say, 1400 to 1200 or less patient days per 1000 population because such a reduction would threaten health, must be treated with some skepticism. If such a claim were supported by reasonable proof that the community had some non-typical health characteristics, then the target rate should be adjusted appropriately. On the other hand, that the utilization rate was currently 1400 patient days would not in itself be an acceptable justification that a reduction would threaten health. Even were this high usage rate entirely medically acceptable practice, the fact remains that there are alternative equally effective medical practice styles that make less aggressive use of the hospital.

Finding 2: The present capability of health planners to perform population-based planning appears weak. The method is poorly understood, needed reference data on utilization rates are scattered throughout the research literature and difficult to access, and local data systems are generally inadequate to obtain reasonably detailed local per capita rates of expenditures, capacity and utilization.

This finding is based on the absence of population-based methods in the planning literature, the absence of comprehensive reviews of utilization rate studies in a format convenient to health planners, and the fact that research studies of local per capita rates of expenditures, capacity and utilization -- per capita rates being the sine qua non of population-based planning -- usually have to collect data on an ad hoc basis. The finding is further confirmed informally by the opinions of our interviewed experts. The Lewin study (ref 45) has also pointed out that very few planning agencies have adequate knowledge of local utilization rates.

Data systems to collect population-based data would not be especially difficult to implement. Three types of information would be needed: per capita use, capacity and expense. The essentials for developing utilization rates would consist of collecting key uniform items on all hospital discharge abstracts: certain use parameters such as discharge diagnosis, procedures and length of stay; certain patient parameters such as age, sex, family status,* insurance coverage, occupation, education, and perhaps race (these last three items would also permit statistical break-outs to objectively measure that equity was being achieved among various population subgroups) and, most crucially, the patient's census tract, so that use could be traced to a patient's area of origin where the population is known in detail. (Billed charges should also be entered on the abstract.) Copies of all abstracts would be collected centrally (patients would not be identified) and processed to produce population-based rates of use. Comparison of rates across different planning areas, adjusted for demography, would guide and monitor planning efforts. The Wennberg studies (ref 28) provide a model for such data collection. The hospital PAS system provides a model for its processing. It appears that Medicare could produce most of this information now. Information on per capita capacity and expense would come from year-end reports of hospitals, such as now made to the AHA. Capacity would include, in addition to such items as set up beds, bed space, and licensed bed complement, such items as type and size of service facilities provided, number of employees, and plant and non-plant assets. Expense would include operating budget items. Per capita capacity and expense could be obtained by apportioning the capacity and gross operating budget of each hospital among census tracts by the proportion of charges or admissions incurred in each census tract.

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* Note, family status is included because hospital use is usually higher for single persons, who have no family at home to help if they are discharged early.

## C. A Modified Method to Project Hospital Capacity

Clearly, while the choice of overall target utilization and capacity rates is, within the limits discussed above, arbitrary from a health standpoint, it is not arbitrary from a political and practical standpoint. First, it will take time for a health care system to adjust to new planning targets if it is not to be so disrupted that health is threatened. Second, because third party coverage insulates both providers and communities from the cost consequences, both may be expected to resist changes in prevailing use and capacity rates. The research evidence for the soundness of the population-based planning approach may therefore carry little weight with providers and communities, and they may require more immediately arguments to justify capacity reduction. We now turn to this problem.

Fortunately it will not be necessary to wait for a purely population-based planning approach to rationalize or begin hospital capacity reduction. There is currently so much easily identified under-utilized capacity and excessively-utilized capacity that lower overall capacity goals can be specified by simple, easily defended arguments. These lowered goals could reverse the present trend of ever-increasing hospital capacity. By the "reverse Roemer effect" (e.g. less beds beget less patients) these lowered capacity goals, if achieved, should cause a fall in hospital use, which in turn will justify a further reduction in capacity, even under a demand-based planning approach.

In most states and areas, two simple, defensible criteria -- efficient occupancy and length of stay standards -- could justify a substantial reduction in current demand-based projections.* If additional criteria are needed, some of the other methods in Section D below, such as a sample survey of "unnecessary" hospital days and admissions should produce sufficient justification to further reduce demand-based projections.

The important conclusion is that it is not necessary to get into theoretical arguments over whether to use population-based planning, or how far utilization and capacity should eventually be reduced. Simple, practical arguments exist now to modify demand-based projections downward, which by the "reverse Roemer effect" could begin to reverse the entire upward trend in both use and capacity rates and produce substantial cost savings.

The role of population-based data in this modified approach is (1) to help identify communities where excess capacity reduction efforts should be given priority, and (2) to monitor per capita hospital capacity, utilization and expense rates to see that planning goals are being achieved. Thus population-based data systems will be needed even if a pure population-based planning approach is not used. Later, if desired, these data systems will permit a more population-based approach to health planning.

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* To illustrate, suppose a state averages 1300 patient days and 4.75 beds per 1000 persons, based on 160 admissions per 1000 persons, 8.1 days length of stay, and 75% occupancy. Suppose the five-year demand-based projection states utilization will rise to 1360 days due to a rise in admissions to 170 offset by a slight fall in length of stay to 8.0 days. At 75% occupancy this would require an increase in the bed-rate to 4.97 beds per 1000 persons. But, suppose the state now makes the easily understood, simple argument that 75% occupancy represents costly, excess under-utilized capacity, and proposes an occupancy goal of 85%. At the projected use rate of 1360 patient days only 4.4 beds per 1000 persons will be required. Another simple argument, with lots of research to support it, is that length-of-stay is excessive and could be lowered from 8.0 to 7.8 days (the national average). Then the five-year demand-based projection would be modified to 1325 patient days, which at 85% occupancy would require only 4.25 beds per 1000 persons. Thus with two simple, defensible arguments -- efficient occupancy and length of stay standards -- the state could justify a reduction in its demand-based projected bed rate from 4.75 to 4.25 beds per 1000 persons, a decline of 10%. The example does not stop here. Assume a "reverse Roemer effect" that a 10% reduction in current bed rate will produce about a 4% decline in use. Then, over five years this reduction in capacity, if achieved, should in fact produce a fall in patient days from 1300 to 1250 days per 1000 persons -- considerably less than original modified demand projection of 1325 days. At this use and bed rate, occupancy would rise to only 80%. Since 85% remains the occupancy target, 1250 patient days will require only 4.0 beds per 1000 population, permitting a further reduction in projected bed needs.

## D. Technical Methods to Identify Excess Hospital Capacity

This section addresses the problem of how to identify specific existing hospitals whose capacity should be retired in whole or in part.* The methods given below do not presuppose who should do the identification nor how identified excess capacity should be retired; these are dealt with in the following chapters.

We suggest that identification of excess capacity proceed in four steps, summarized here and explained more fully below. First, overall statewide hospital capacity planning goals should be set for the state. Second, overall area-wide capacity goals should be set for the communities and local planning areas within the state in such a way as to lead to conformance with state goals. (In the case of natural planning areas which cross state boundaries, area-wide goals would take into account goals of both states). Third, hospitals with excess capacity in each area should be identified for reduction in amount sufficient to achieve conformance with area-wide goals. Fourth, to the degree necessary, a detailed feasibility study of the impact of the proposed reductions upon area hospital expenditures, service availability, practice patterns, and the other factors identified in Chapter II, Section C should be made.

It is not necessary to follow the above recipe. If the state does not take action, local planning areas could start with the second step. Or it may be that area-wide goals cannot be agreed on, but certain facilities might be identified and agreed on as excess capacity by the third and fourth steps. We simply suggest the above procedure as a logical way to proceed, but it can be modified to meet political realities.

### Step 1: Statewide Hospital Capacity Goals

The state can set statewide hospital capacity goals either on the basis of population-based standards as in Section B, or by modifying demand-based projections using simple arguments as in Section C. In the latter case, efficiency arguments based on occupancy and length of stay will usually suffice to justify lower capacity rates.

These goals are preferably stated in terms of population-based rates, not only for bed-capacity but for intensity-capacity, e.g. beds per 1000 population, various service facilities per 1000 persons, hospital employees per 1000 persons, hospital assets per 1000 persons. The service facility goals should be specified in terms of population-based rates for the most common services and for certain less common but costly services; e.g. obstetrical beds, coronary care beds, etc. All rates should be at least age-sex specific and allow for out-of-area use. If only bed-capacity goals are specified, available capital will flow into increased intensity-capacity, as noted in Chapter III.

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* Even under a moratorium strategy, which forbids any addition to existing capacity, it may be necessary to retire some existing capacity to accommodate new capacity for shifting populations.

*It would be advisable for the state to specify long-range goals as well as immediate goals.* For example, a state with 4.5 beds per 1000 persons might specify a five year goal of 4.0 beds/1000 and a long range goal of eventually 3.5 beds/1000. Without this long-range goal, areas with 3.5 beds might try to justify moving up to 4.0 beds.*

### Step 2: Area-wide Hospital Capacity Goals

Capacity goals for each area, adjusted for its particular population characteristics, should then be specified such that when aggregated they conform to the statewide targets. State efforts at capacity reduction should preferably be concentrated in areas of high expense, use and capacity, rather than on across-the-board cuts. Thus the area goals might best be stated as a population-based maximum limit on capacity for each area. Areas with use and capacity rates above the area goal would be identified, and staged intermediate goals would be specified to bring the area down in successive steps toward the area goal over time, either by direct reduction or moratorium. In a modified demand-based approach, more stringent occupancy and length-of-stay standards would justify area-wide hospital capacity goals that would get most high use areas on the path to lower capacity; use of the other methods below might justify additional capacity reduction. A population-based data system would allow ready identification of communities with high per capita expense, use and capacity, as well as monitor the progress and impact of capacity reduction on use and expense.

### Step 3: Identification of Area-wide Excess Capacity

Within communities a combination of the following methods would identify the most likely candidates for excess capacity reduction. The first three methods seek to identify under-utilized capacity. The second three methods seek to identify excessively-utilized capacity. The last three methods do not identify specific hospitals with excess capacity but rather identify capacity which might be politically or economically acceptable to reduce when (by step 2 above) the area itself has been identified as having excess capacity.

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* Of course areas with too few beds should have planning goals to increase hospital capacity. However, the evidence of the Hill-Burton program in underserved areas suggests that, unlike capacity reduction, additional steps must be taken to draw in the necessary physicians and other services to support these additional beds with a balanced program of health services. Thus, simply decreasing hospital capacity in areas of excess appears to reduce excess use and underutilized capacity, but simply increasing capacity in areas of shortage often appears to increase inappropriate use and under-utilized capacity.

Method 1. Minimum Occupancy Standards. Standards for minimum occupancy of general service departments -- medical/surgical, pediatrics, etc. -- are common (see ref 47 for a compilation of state occupancy standards, and ref 19 and 20 for citations to the literature on ideal occupancy). Such occupancy standards are usually based on efficiency rather than medical considerations. Occupancy of small, infrequently used high intensity facilities is usually a meaningless concept in practice, and minimum patient volume (Method 2) is the more apt standard. There are potential hazards in the blind, across-the-board application of minimum occupancy standards to reduce excess capacity, since it may penalize conscientious providers trying to reduce utilization, and encourage less conscientious providers to increase utilization. This problem is discussed in Section D below.

Method 2. Minimum Patient Flow Standards. We regard this method one of the most promising and least exploited methods currently available, especially for identifying costly, underutilized high intensity capacity like coronary care and cardiac surgery units. Standards for minimum patient flow can be based on a combination of both medical and economic considerations. Unfortunately, we found no comprehensive review of minimum patient flow standards by type of service facility. Such a review is badly needed.

A common medical criterion used is minimum patient volume standards for clinical personnel of a service facility unit to maintain professional skills. For example, on the basis of expert opinion standards, this criterion alone would justify closure or merger of perhaps 85% of cardiac surgery units (ref 22). Nearly all experts interviewed felt that increased patient volume in specialized facilities led to improved patient outcomes. Research is needed to support and quantify these expert opinions.

A second medical criterion is insufficient patient volume to support needed back-up services. This criterion was mentioned by a number of interviewed hospital experts as a justification for closing entire small hospitals, observing that an admitted patient who developed serious complications would not find needed specialized care at smaller hospitals. This contention is partially supported by Berry's work (ref 58) showing that smaller hospitals have fewer specialized service facilities. On the other hand, larger hospitals may maintain specialized service facilities out of proportion to community need. We are unfamiliar with medical literature documenting patient outcomes by size of hospital. In our opinion patient outcome rates are a better standard of hospital effectiveness than input standards such as size and service mix, but outcome rates are not commonly measured in hospitals. Eventually it may be possible to develop a method for identifying service facilities with excessive case fatalities, complications and other adverse outcomes, rather than relying on indirect medical criteria like minimum patient flow. The literature should be reviewed and further research initiated.

Minimum patient flow standards are additionally justified on the ground that a too small volume of services can not be produced economically. For example, a minimum standard of 1500 births per year has been suggested for obstetrical units (ref 51) on the basis of both maintaining specialized medical back-up services and on the ground that a volume below this amount necessarily produces uneconomic occupancy levels. The research on this point is unsettled. For example, Baron (ref 52) has observed that obstetrical delivery is cheaper in small hospitals, whereas Zaretsky (ref 53) finds that when service mix and case severity are taken into account, large hospitals are no more expensive. Research is needed.

It would appear that currently available minimum patient flow standards, if exercised, could identify many costly, high intensity facilities for reduction, and the method should be further developed. California, New York, and Massachusetts either have or are considering such standards, but reportedly these standards are yet to be generally enforced. HEW's Bureau of Health Planning and Resources Development currently has such standards, among others, under development for a number of service facility types. Most of these standards appear to be based on consensus expert opinion. The empirical foundation for such standards might be strengthened if complication rates and outcome data were obtained and compared for facilities with high and low patient volume. (PAS-MAP could readily provide some of this data.) Disclosure of complication rates at low volume facilities at the time excess capacity was identified could also strengthen the case for reduction by merger or closure.

Method 3. Excessive Hospital Employees and Assets. One can examine whether a hospital appears to use excessive labor and capital, particularly if population-based rates show that hospital labor and capital in the community are high compared with comparable communities. If there is only one hospital in the community, the population-based rates adjusted for out of area use reveal this directly. If there is more than one hospital in the community, the matter is more complicated because the true service population of the hospital cannot be identified. Ratios like employee man-days per admission, plant and equipment assets per admission, and patient expense per admission, are helpful indicators, but can be misleading. If a hospital is very health-efficient, and screens out all but the most severely ill patients, these admission-based ratios could be appropriately high. On the contrary, an inefficient hospital over-stocked with employees and high cost technology could have these admission-based ratios at a moderate level by over-admitting less severe cases to the hospital and to its high intensity facilities. Thus in multi-hospital areas, such ratios must be used in combination with methods to identify excessive use.

Method 4. Excessive Length of Stay Standards. Methods to identify excessive length of stay are common but crude. They generally rest on comparing length of stay for common discharge diagnoses among hospitals of the same type. The method thus requires some system of classifying hospitals, and there is no consensus on how this should be done (for a discussion of hospital classification methods, see ref 54). Further, diagnosis reports are often soft. Some hospitals complain that they have more severe cases which length of stay data do not accurately reflect. Another problem with present length of stay systems is that they are generally based on local averages, whereas research indicates that much earlier discharge than prevailing averages is possible without medical harm (ref 55,56). The most sophisticated length of stay comparisons are performed by the Medicare MADOC system. Some Blue Cross companies and a few other insurers also have sophisticated length of stay data systems, but these are not always comparable and planners may not always have easy access to them. Population-based data systems would ameliorate this access problem.

In combination with other methods, even crude length of stay data can help identify hospitals with excessive use whose capacity might be reduced. The burden of proving that its cases are more severe might be put on the complaining hospital. The biggest problem with length of stay standards is that they do not get at (or correlate with) whether the patient should have been in the hospital in the first place (ref 28). If less severe cases are admitted, length of stay could be misleadingly short.*

Method 5. Admission Standards for Hospitals and Service Facilities. Methods to identify excessive admissions, both to the hospital and to high intensity units within the hospital, constitute the most glaring gap in methods to identify excessively-utilized capacity. At present, we are almost wholly reliant on local physician review of admissions, a lengthy subjective process. Local physicians tend to be colored by local practice standards rather than by health-efficiency motivations. Nevertheless, admission review should be used when feasible.

The main difficulty with subjective physician judgments is to find objective indices against which to compare them so that the planner and policymaker are confident that they are effective. Three possibilities for further research and development are suggested here.

(a) In areas served principally by a single hospital, population-based admission rates (e.g. per 1000 persons) to the hospital, to specific service facilities within the hospital, and for specific procedures can be compared with population-based admission rates for other areas with comparable populations. Excessively high rates would suggest excessive use. (In a single hospital area, population-based rates can act as a check on all use and capacity directly, not just admissions alone.)

(b) In areas with several hospitals, method (a) does not work because one cannot identify the portion of the population served by a specific hospital. Sometimes by inspecting patient origin studies it is possible to divide large metropolitan areas into smaller natural market areas with fewer hospitals such that patients seldom go to hospitals outside these areas. Method (a) can be used to identify if these areas have excessive admissions. But it is difficult to pin population-based utilization rates down much further than this. As an alternative, one can inspect the population-based utilization rates for the community and identify which utilization rates appear excessive. For example, hysterectomies per 1000 women or coronary care patient days per 1000 adults might be high. Those hospitals (and physicians) that accounted for a greater proportion of these "index" procedures might then be singled out for further investigation by method (6) below. As a refinement, the area population might be subdivided into fictitious "service populations" proportional to the admissions to each hospital (this technique is described by Bicknell and Walsh (ref 57)). This artificial "service population" could then be used as a denominator to compute utilization rates per 1000 "service population" for the excessive procedures identified above. This refinement is biased in favor of hospitals who admit patients generously, but if high utilization rates were found it could very likely indicate excessive use.

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* One interviewed expert felt that length-of-stay would be more useful if all episodes of less than three days were subtracted out first. Most such short admissions, he believes, could be handled on an ambulatory basis, and a hospital with a disproportionate number of less than 3-day episodes should be carefully reviewed for possible excessive admissions.

(c) In both single and multiple hospital areas, one could examine two kinds of ratios: physicians per 1000 population by specialty, and admissions and patient days per physician by specialty, particularly for the "index" procedures identified in method (b) above. If a particular specialty was found to be over-represented in the area compared with other areas, their admissions could be further investigated by method 6. And hospitals which had a disproportionate number of physicians on their medical staff, either in the over-represented specialties or who had high admission rates compared with their colleagues, could also be investigated by method 6. To illustrate, suppose family practitioners at one hospital consistently maintain an average of 10 to 12 hospitalized patients per physician, whereas family practitioners at a second hospital maintain only 3-5 hospitalized patients per physician. The practice at the first hospital should be reviewed closely by method 6. It might well turn out that the high use could be easily explained (for example, if age-adjusted data were made available, these rates may be due to a geriatric-oriented practice). On the other hand it might reveal unnecessary use. We emphasize this method is speculative and unproven, and it is suggested only as a research possibility.

Method 6. "Unnecessary Days" Medical Audit. The following method gets at both excessive admissions and length of stay. However, so far it has only been used for research, and is unproven as an operational planning tool to identify excessively-utilized capacity. The method is generalized from the work of Gertman and Bucher (ref 58), who used it to show that unnecessary days occur not just at the end but all through a patient stay episode. Myers (ref 59), who replicated Gertman's work in a hospital in New York City, has pointed out that if the percentage of unnecessary days produced by a hospital could be identified, this factor could be used to penalize poorly performing hospitals, for example by lowering their reimbursement rates proportionately, or conversely to reward the well-performing hospital with higher reimbursement and Certificate of Need awards. We are suggesting that the percentage of unnecessary days is also a measure of the excessively-utilized capacity of a hospital.

The method consists of first selecting a small panel of physicians, who will supervise the audit. These physicians should have impeccable clinical credentials. They should also have some measure of independence from the local area to assure objectivity; for example, they might be drawn from a university familiar to local physicians but not wholly dependent on them for referrals.* This panel would draw up reasonably explicit criteria for "unnecessary" patient days. Preferably they might do this in consultation with the local medical society. Three types of unnecessary days could be considered. The first would be unnecessary length of stay. Criteria might include such things as unnecessary days between admission and operation, days spent on laboratory tests which could have been done on an ambulatory basis, days spent after an operation in which no medical ministration or observation occurred, etc. The second would be unnecessary admissions, in which case all patient days would be considered unnecessary. Criteria might include admissions for conditions which could have been treated on an ambulatory or home care basis, admissions where an alternative ambulatory or home care treatment could have been tried first, admissions not justified by clinical indications, etc. The third type would be patient days spent in high intensity service facilities when lower intensity care would have sufficed. With these criteria the audit panel would then audit a scientifically drawn sample of patient episodes from each hospital, not for the quality of the care, but for the necessity of each patient day. When patient days were tentatively found unnecessary, the panel would consult the attending physician to determine if any mitigating factors existed.** If not, that patient day would be deemed unnecessary. The percentage of unnecessary patient days to all patient days in the sample would then be calculated, and assumed to hold for all patient days at the hospital. This percentage might be reduced by some arbitrary amount to allow for the subjectivity of any audit. The resulting percentage of unnecessary days for each hospital would then be an index of the excessively-utilized capacity at that hospital. It would not reflect on the quality of the care there, but only on its health-efficiency.

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* Insofar as PSROs consist of local physicians, there may be conflict of interest problems in having the local PSRO perform this audit. Local physicians would be biased in favor of their own hospitals. The problem of bias might be solved by a state-level appointment of panels.

** One mitigating factor would be the absence of alternative ambulatory or home care services. Thus an "unnecessary days" audit would also identify needed services in the community.

This method deserves research and development. If successful, it would help assure that hospitals maintaining high occupancy by filling their beds with unnecessary patient days did not escape excess capacity reduction. The work of Wennberg (ref 28) suggests that unnecessary admissions rather than unnecessary length of stay contribute most to excessive use, and that length of stay and admissions do not correlate well. The discussion of method 4 above indicates that we can, to a useful degree, identify excess length of stay. This method potentially could find excessive admissions, should it prove feasible in practice.

Since a coercive audit may provoke provider resentment, this method could be presented as a relief mechanism. One overly-simple approach would be for planners to tentatively assign an across-the-board percentage of excess capacity to each hospital based on overall community per capita capacity target rates. (For example, if the community had 5 beds, 15 hospital employees and $300 of hospital assets per 1000 persons, and if the planning target for capacity was 10% less beds, employees and non-plant assets, then each hospital would tentatively be identified as having 10% excess capacity.) Hospitals wishing to prove they had less than 10% excess capacity could volunteer for a detailed review, including an "unnecessary days" audit.

Method 7. Obsolescent Facility Standards. Other things being equal, if planning targets call for hospital capacity reduction, it would be desirable to close obsolescent facilities before others are reduced. This method has particular utility because of the surplus of older hospitals in center cities created by the urban to suburban population shift. Thus many of these hospitals can be tagged by failure to comply with medical and physical plant safety standards. The New York City HSA has used mainly such standards in identifying 30 hospitals whose capacity could be reduced in whole or in part (for their methodology, see ref 60). There is of course no assurance that an older hospital is guilty of more excess capacity and use than any other. This method could therefore be quite arbitrary and unfair to the hospital and physician staff at the older hospital unless arrangements were made to protect their interests, for example, by merger, purchase of space in a remaining hospital, or job relocation and change of privileges.) Hill-Burton and state and local code requirements provide a wealth of standards to assess obsolescence.

Method 8. Adjacent Facilities. Other things being equal, if area-wide planning targets call for capacity reduction, it would be desirable to reduce facilities that are located near each other, particularly in areas of declining population. For example, if cobalt units are in excess in the community and two cobalt units are located in hospitals right across the street from one another, one should be closed or merged with the other. Other things truly being equal, which one to close will be a negotiated political decision (see method 9). Again, as in method 7, there is no guarantee that adjacent units are the ones that are particularly under-utilized or excessively-utilized in the community. But reduction here might result in more efficient use of the remaining units.

Method 9. Consensus Approach. In areas served by several hospitals, local providers generally have strong impressions on which hospitals have underutilized and excessively-utilized capacity, but are reluctant to make these views public. Informal conversations can provide helpful clues in pursuing the other methods above. These impressions themselves would seldom hold-up in a regulatory process unless providers were willing to testify forthrightly, an unlikely event because of the threat of suits and counter-suits.

However, this local inside knowledge can be tapped in another way which we believe has considerable promise. If reasonable overall hospital capacity reduction goals for a community are negotiated with local providers, and these providers understand that within general guidelines they will be allowed to work out among themselves which specific capacity should be reduced and thereby avoid whatever outside pressures might otherwise be brought to bear, they may be willing to do so. For example, if providers are told that the community must reduce its hospital capacity 10%, the providers would sit down and negotiate with each other a plan as to where the cuts would be made.*

This method has several advantages. First, it uses local knowledge to work out local solutions which reflect the true sociopolitical structure of the community. These solutions are therefore likely to be feasible in practice. Second, the hospital sector has a history of social responsibility, which this method might maximize. Heretofore, hospitals and society shared the view that "more is better; hospitals are just becoming aware that society is slowly shifting to the idea that "more is not better." Once the hospitals understand that society's expectations have changed, most hospitals will want to meet the new challenge. But as we noted in Chapter III, the present structure and incentives within the hospital system penalize the individual hospital that tries to act responsibly on its own. This method allows the hospitals to work together. Third, the method allows the hospitals to work out a plan to implement the reduction along with identifying the capacity to be reduced.

This consensus method might gain in urgency and objectivity if a few local representatives of business, labor and insurers as well as planners sat in on the process. These buyers of health care have perhaps a more objective and certainly a different viewpoint on cost containment than do providers.

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* Rhode Island appears to be trying a process much like this to control hospital expenditures. A voluntary mechanism, comprised of the hospitals, Blue Cross and state representatives, first decides the overall budget ceiling for the state; then the hospitals negotiate with each other to decide how much of this budget each hospital shall get. So far capacity reduction has not been an issue, but it may become one as the ceiling gets tighter. The Rhode Island mechanism is one prototype for Method 9.

Note, we are not suggesting a public "consumer participation" process, which we believe could defeat the negotiation process. The negotiation of capacity reduction will demand expertise and candid interchange on the strengths and weaknesses of the various local hospitals,** all of which may be facilitated in a small, closed process. What is needed we believe are a few key, skilled, powerful representatives of business and labor to realistically represent the interests of buyers and the community, and in turn, these representatives will educate the community. A public negotiation process will reduce candor and escalate rhetoric and politics; it should be used if closed negotiation fails to yield a satisfactory plan. As long as public policymakers have final approval of any proposed solution, the public's interest should be protected.

### Step 4: Impact Study

The fourth and last step would be to conduct an impact study of the proposed reductions identified by the methods above. In the more coercive, regulatory strategies to reduce hospital capacity, this impact study would be a detailed justification of the proposed reductions, showing them feasible and equitably determined. In the less coercive approaches the study would simply be a blueprint for the reduction and assure that it was well-thought out. The impact study would comment on the effects noted in the checklist of Chapter II Section C. In particular, the impact study would estimate the costs and savings associated with the retirement, merger, or conversion to other use of particular excess hospital capacity identified above and/or a moratorium on further capacity increases; it would determine whether the excess capacity or its debt obligations might have to be purchased, whether the resulting savings would justify the purchase, and whether the purchase price could be offset by conversion of the space to other uses. The study would assess the availability of alternative services and any necessary changes in service patterns. For example, in isolated rural areas where alternative hospital care may be quite far away, it may be necessary to maintain a hospital which by the methods above should otherwise be closed or reduced; or ambulance services to other areas might be necessary before the reduction could occur. This might also be the case for an inner-city hospital which is the only source of care traditionally serving certain under-privileged population groups. Or, as another example, if the impact study suggested it would be most cost-effective to close an entire hospital, it would need to examine whether the surrounding hospitals could pick up the load and how physician privileges might be affected.* These and other considerations of the factors on the checklist of Chapter II Section C might override the findings of the above methods, and would need to be weighed by planners and policymakers. But the above methods would at least inform decisionmakers of the cost in terms of excess beds and excess intensity-capacity left standing. (This quantitative weighing of the trade-offs has been stressed by Bicknell and Walsh (ref 57). An example of such an impact study for an actual hospital tentatively identified for conversion to other use may be found in ref 61. A useful method for looking at regional planning of service availability may be found in ref 62.

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* To minimize physician resistance, excess capacity might be identified for closure at institutions where a majority of the affected medical staff already hold multiple privileges at other hospitals.

** An excellent set of practical guidelines attempting to distinguish hospitals with strong programs from those with weak programs has been prepared by the Detroit Hospital Council (ref 76). These guidelines, based on observable program structural characteristics believed to be associated with good performance, constitute another method of identifying hospitals for reduction.

## E. Problems in the Technical Methods to Identify Excess Capacity

In this section we deal with three problems in the adequacy of the technical methods in Section D: political, legal, and incentive adequacy. We regard the incentive problem as particularly serious.

### Political Adequacy

Aside from method 9, none of the methods take account of which hospital capacity is politically feasible to reduce. Rather, they identify which capacity is excessive and ought to be reduced. Gut issues must be expected to arise for which there is no technical recipe. For example, suppose the hospital which the technical methods identify for closure turns out to be the one osteopathic hospital in town, or the one black hospital. These sensitive political issues will simply have to be factored into any technical considerations.

### Legal Adequacy

In our opinion the methods of Section D are crude but probably technically adequate to identify all the excess capacity reduction the country will be able to handle in the next decade. On the other hand, many hospitals may resist capacity reduction and carry the matter into court. Given the present climate of public, legislative and judicial understanding, the technical methods to identify excess capacity may be the point where capacity reduction is most vulnerable to legal impeachment. Beyond attacking excess capacity reduction generally as a restraint of trade (see Chapter III, Section A for a defense), a hospital may claim that the technical methods above are too vague and subjective, and that it is being unfairly singled out for capacity reduction (especially if it is identified for closure) and has been denied "equal protection." It may also claim it has been denied just compensation.

While this and other legal challenges will have to be met with the facts of any specific situation, some general points can be made. First, the most crucial factor will be the degree of public and legislative support behind a policy of capacity reduction. The greater the support, the more likely the technical methods above will hold up in court. Conversely, if there is no public and legislative support, the methods are unlikely to hold up no matter how sophisticated they are made. Thus it will be important to have the states pass laws in support of excess hospital capacity reduction. Such laws should state the criteria for identifying excess capacity and provide legislative findings citing the evidence (Chapter I and Chapter III) in support of such policies, so that the courts have a clear record of legislative intent and arguments to support policy interventions. (To our knowledge, only New York currently has considered such a law (S7287-A-A 9257-A, § 9) and it may or may not stand up in court in its present form.)

Second, in Chapter V we discuss both coercive and non-coercive strategies to implement excess capacity reduction. The more coercive the strategy, the more the relevant planning and policymaking agencies should have (or have access to) a competent legal staff. Bicknell (ref 43) has emphasized that the best protection against suits is readiness to go to court. The attitude of the legal staff should not be that the planning agency is always right (it may not be; the methods are crude), but rather that the planning agency is open-minded but has solid grounds for its decisions and is prepared to defend them in court if necessary. The hospital should be given the planning agency's legal brief in advance, and allowed to make the best case it can to the agency; the object is truth, not victory. But the presence of a capable legal staff quite ready to go to court should weed out the more trivial suits.

Finally, strategies to implement excess capacity reduction which are less coercive and regulatory are less likely to provoke legal challenge. This would include strategies which emphasize reduction by merger rather than closure, which emphasize action by the private sector rather than the public sector, and which find ways to reward providers who reduce excess capacity rather than just penalize those who don't.

## Identifying Providers Who Should be Rewarded

The most serious weakness of the technical methods to identify excess capacity is that blind application of the methods could penalize desired provider behavior. The methods are weakest where they should be strongest: identifying excessive use; and strongest where they could afford to be weaker: identifying underutilized capacity. They must be used with great care to avoid perverse incentive effects. Consider the following example to illustrate the problem. Suppose a community has three hospitals, each with 300 beds. Suppose the first two hospitals, X and Y, are high quality institutions, but the third, Z, is more marginal and has trouble attracting medical staff. Suppose the town has a rather high level of use, 1400 patient days per 1000 population, and that the first two hospitals get most of the business. Their occupancy is 75%, but the third has only 60% occupancy.

Now, suppose hospital X becomes aware that utilization in the community is excessive, and conscientiously begins to screen admissions and length of stay. Hospitals Y and Z do not, Y because it fears offending its medical staff, and Z because it is already in financial trouble. Hospital X perseveres; many of its medical staff cooperate and alter their practice to use the hospital less. But many of the medical staff simply hospitalize patients refused by hospital X in hospital Y or even Z, which are happy to have them. As a consequence, hospital X winds up with an occupancy of 60% and a lot of financial problems. Hospital Z winds up with 65% occupancy and some financial relief. Hospital Y winds up with 80% occupancy and excellent financial strength (and probably begins planning a building program).

Now to complete the illustration, suppose method 1 alone -- minimum occupancy standards -- were blindly applied in this community. Assuming a planning target of 85% minimum occupancy, this method would identify hospital X to be reduced to 210 beds, hospital Z to 230 beds, and hospital Y to 280 beds. The high quality conscientious hospital, X, gets penalized the most! The high quality hospital indifferent to excessive use, Y, gets a mild reduction! And the marginal hospital, Z, is scarcely distinguished from X!

We believe the key to success of any policy to contain hospital costs is rewarding the enlightened hospital that takes into consideration both the quality and cost of hospital care. The real pay-off in holding cost is reducing unnecessary* admissions and patient days. Capacity reduction is only a means to that end, via the reverse Roemer effect. Reducing the capacity of a "lean" hospital may in fact be counter-productive. In our example, it would be better to reduce capacity at hospital Y and particularly Z; if more patients were placed in the presently under-utilized capacity at hospital X, its tight review procedures would further reduce excess use.

To avoid the perverse incentive effects exemplified by our illustration, the methods to identify underutilized capacity must always be tempered by the methods to identify excessively-used capacity. Presumably, very few unnecessary patient days would be found at hospital X (we refer to such a hospital as "lean"), rather more would be found at hospital Y, and a great deal would be found at hospital Z. Hospitals with few unnecessary days should be excepted from capacity reduction, if the hospital wishes, even if they have considerable under-utilized capacity. This would give the lean hospital a reward for its performance, and hopefully convince other hospitals to follow its example. The trick is to identify those hospitals.

In areas with only a single hospital, methods to identify excessive use are in good shape (method 5a). The population served can be identified, and population-based utilization rates can be constructed to identify whether excessive use is occurring. In areas with several hospitals, the methods (5b, c, 6) are mainly in the research and development stage. The basic difficulty in these areas is that there is no unbiased way to define the service population of a hospital, so that it is impossible to construct population-based utilization rates for each hospital. Less direct indicators must be used. These methods urgently need development.

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* As emphasized in Chapter I, Section H.6, by "unnecessary" is meant both use which is medically unjustified and use which is medically justified but for which equally effective, less costly alternative treatment is possible. The latter type of unnecessary use appears to be more prevalent.

There is one exception to this problem: HMOs and other prepaid delivery systems. Because prepaid delivery systems have a defined population, it is possible to determine population-based utilization rates for them. (In multi-hospital areas with prepaid delivery systems, the population enrolled in these plans can and should be subtracted out in computing the population served by the remaining hospitals.) If an HMO or other prepaid delivery system has (comparably adjusted) population-based hospital use rates less than the planning target for the community, it should be excepted from capacity reduction; if it does not, it should be given no exception.

## F. Conclusions

1. Demand-based planning is self-fulfilling and inflationary. Planning should shift more toward a population-based approach. This will require the improvement of local population-based data collection systems, and training and improved methods for planners.

2. It is not necessary to wait for ideal planning methods to begin excess hospital capacity reduction. Simple, easily defended modifications in demand-based planning can produce lower hospital capacity planning goals. If these goals are achieved, the reverse Roemer effect should cause utilization to drop, reversing the present costly upward trend.

3. Methods to identify excess capacity are crude, but adequate to begin. To prevent these methods from being legally impeached, it will be necessary to improve the climate of public support and obtain explicit legislative statements on capacity reduction.

4. The greatest inadequacy of present methods is their uncertain ability in areas with several hospitals to detect the hospitals with few unnecessary admissions and patient days. These "lean" hospitals (and "lean" HMOs) should be excepted from capacity reduction as a reward for their good performance.

# Chapter V

# STRATEGIES TO REDUCE EXCESS HOSPITAL CAPACITY

The essence of reducing identified excess hospital capacity is simple to state but difficult to bring off: the public, the provider community, and/or the hospital sponsor must be convinced that the excess capacity should be reduced. The public can usefully be distinguished into the general public; its representatives, the legislature; the large buyers of medical care, including insurors, business and labor; and the community or local area affected. Providers can usefully be distinguished into the affected medical staffs, the physician community, and the hospital community. Excess capacity reduction cannot be accomplished without at least some of these parties on board. Excess capacity reduction will be most harmonious and effective, the more of these parties that can be persuaded, via a suitable combination of carrots and sticks, that their best interests are better satisfied by other means. The fewer parties supporting excess capacity reduction, the more difficult, coercive and adversarial the process will be, and the more organized and coordinated the parties supporting reduction must be.

Thus at heart the reduction of excess hospital capacity is a socio-political problem. The general strategies for excess capacity reduction divide out according to the constellation of interests that can be convinced to support reduction. These strategies are discussed in Section A. In general they are non-exclusive, and all of them should be used in concert where possible. The less aggressive strategies appear more immediately feasible; the more aggressive require more widespread support and more unassailable technical methods. In Section B we discuss collateral strategies, such as consumer cost-sharing and prepaid alternative delivery systems which, while not direct strategies to reduce excess capacity, are supportive of the direct strategies of Section A. In Section C we discuss strategies to build public support. In the final section we catalog and discuss the technical tools -- the "carrots" and "sticks" -- employed in the above strategies to reduce excess hospital capacity.

## A. Strategies and Stances

The following strategies are in order of generally decreasing regulatory coercion involved. The strategies are not distinct but overlap and merge into one another. All or any combination could be tried in concert together.

### Strategy 1. Direct Regulatory Reduction

This strategy assumes sufficient public and legislative support that a regulatory program can be established with the explicit mission to go out and identify excess capacity and to use the available means and authority to reduce it. (In Chapter VI we discuss where such a program might be placed. To anticipate the conclusion, the most feasible placement currently appears to be at the state rather than local or federal level.)

The sine qua non of this strategy is that the legislature is willing to pass an enabling statute giving the agency authority to reduce or revoke a hospital license if the agency makes a finding that such hospital capacity is unneeded. Such a statute or its legislative report language should preferably spell out findings that sufficient market discipline in the hospital sector no longer exists, so that a legal challenge that capacity reduction operates in "restraint of trade" can be successfully withstood. The statute must resolve whether capacity reduction by the regulatory program constitutes a "taking" or a "regulatory decree" under state law. If a "taking," the legislature must appropriate funds for due compensation of hospitals whose capacity is reduced. If a "regulatory decree," it still may be advisable to smooth the path of reduction with some funds to buy out incurred debts of hospitals whose capacity is reduced to the point that they cannot meet their obligations. The statute or regulations must further spell out the criteria and procedures whereby excess hospital capacity will be declared unnecessary by the regulatory program. Otherwise, a capacity reduction action may be legally challenged as violating "due process" and "equal protection." This may require amendment of the state's licensure law. (For a discussion of these and other legal issues see Appendix B of this report.)

This strategy is a pure "public utility" approach to health care policy (see Chapter II, Section B). It is also a reasonable step toward putting a budgetary ceiling on hospital expenditures, since it starts putting in place the legislative and administrative machinery necessary to place a ceiling on hospital capacity. There may therefore be legal advantages to writing the enabling statute for the capacity reduction program in such a way that hospitals are declared outright to be a public utility. This appears to be what California has done implicitly in establishing the regulatory power of that state's Commission on Health Facilities (see California statutes of 1973, Chapter 1072, Health and Safety Code Sec. 441, subparagraph C, pocket parts).

Although this strategy appears to be the most simple and direct way to reduce excess hospital capacity in theory, it has not turned out nearly so simple in practice. In Chapter III, Section B we cited a number of examples in this and other countries where, with virtually complete legal authority available, the direct regulatory approach has had mixed or little success in reducing existing hospital capacity. Public reaction has caused the government to draw back from enforcing capacity reduction. It appears that only where government has faced severe financial pressures has it had the political courage to follow through. This considerable experience underscores the need for building public and provider support for excess hospital capacity reduction (see Section C below).

The stance and timing of the hospital capacity regulators will also affect public and provider reactions. If capacity reduction has strong public support (seldom the case), the regulators can afford to be more tough. Until public support can be built up, the regulatory agency must move more deliberately and adopt a more cooperative stance toward providers. For example, it could work with the communities to set general state and local hospital capacity goals, and give the communities and their providers time to work out and implement plans to achieve these goals (see Chapter IV, method 9). It could also employ the other strategies below, particularly 2, 4 and 6, offering such "carrots" as assistance, alternative ambulatory and home care services, etc., where possible. Rather than exercise the regulatory power of its enabling statute directly, it might use its authority more as a pressure to be exercised eventually as a last resort. This pressure would help prod local areas toward achievement of hospital capacity goals.

A completely different stance will be possible in areas where the hospital community itself recognizes and supports excess hospital capacity reduction. This is not unlikely. As mentioned earlier (Chapter IV, Method 9) the hospital industry has a tradition of social responsibility. Hospitals are also not unmindful that tighter capacity would give them more leverage in negotiations with their medical staffs. But they recognize that under the present system, without an enforceable management mechanism that cuts across all hospitals, those hospitals which exercise restraint in adding capacity are penalized if any single hospital decides not to exercise restraint. (The Health Care Corporation proposal of the AHA appeared to be one effort by some leaders of the hospital industry to establish such a multi-hospital management mechanism.*) Therefore some hospitals may welcome enlightened public utility regulation as the way to establish this multi-hospital management mechanism, and may cooperate in its design and implementation, rather than fight and have a bad regulatory system eventually imposed on them. In this case the regulatory agency could act more as a referee in the hospitals' negotiations to reduce capacity, simply enforcing that all hospitals cooperated with the decisions made. It would also have to assure that such regulation did not become so "enlightened" that the public interest becomes subsidiary to the hospital industry's interests (see Chapter VI Section D on assuring the performance of the capacity reduction program). If a community, a state, or the nation wishes to pursue a public utility approach to health care policy, this trend of thinking in the hospital community should be encouraged.

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* One group of hospital administrators interviewed suggested that if HCCs (Health Care Corporations) were set up in each natural service area (e.g. an area which patients do not normally go outside of in seeking hospital care), with the HCCs having managerial responsibilities over all hospitals within that area, and if these HCCs were assigned a specified amount of dollars per capita to provide hospital services to the area's population, then the HCCs would of necessity work out arrangements to keep use and capacity within the specified budget. Under their suggestion, patients who did not like their area HCC could go to the neighboring HCC, which would be reimbursed by the first HCC from its allotted budget. This suggestion is a pure public utility approach with a budgeted ceiling on expenditures (see Chapter III) and has all the virtues and difficulties of that approach.

## Strategy 2. Create the Conditions for Hospital Capacity Reduction

This strategy uses a two-pronged approach, placing as many general pressures ("sticks") as possible on hospitals and then rescuing them from these pressures with inducements ("carrots") to reduce excess capacity. The strategy thus appears much less negative than strategy 1 above. The general pressures should be designed in such a way that hospitals and communities maintaining excessive use and capacity feel hardship, and those with little excess use and capacity do not. Thus, in the face of such negative incentive pressures, reducing excess capacity should be attractive. Concomitantly, an assistive agency or mechanism should be set up to help hospitals and communities experiencing difficulties due to these pressures to reduce their excess capacity. This agency can offer grants, assistance and other inducements. The agency could be public or private; it could be permanent, or simply be a combination of interested parties brought together temporarily to accomplish the purpose of capacity reduction in a specific area or instance.

The more important negative inducements that can be brought to bear in areas having excessive use and capacity include lower reimbursement rates, restricting capital, curtailing Certificate of Need awards, more stringent licensure renewal inspections, and disclosure and publicity. Section D below discusses these and other "sticks" and "carrots."

Derzon (ref 63), in an insightful and thought-provoking statement (see Appendix D), has suggested that these pressures should focus on creating the conditions for merger. He believes that an indispensable predisposing factor for merger is to make hospitals think of themselves in terms of the size they really are (their operating size) rather than the size they think they are (their licensed size). Thus hospitals must have their license reduced in some way from their licensed size to their operating size. Then many smaller hospitals would have to think merger in order to put together the patient base for a decent program. If these mergers were managed properly to produce a net decrease in capacity, healthier hospitals would emerge with less need, ambition and opportunity for expansion. Despite the New York experience (see Chapter III, Section B) that occupancy-adjusted rate controls can pressure hospitals to reduce their licensed capacity, Derzon believes rate controls are too administratively burdensome, too subjective in application, and too easy for hospital administrators to beat eventually. In the general pressures above, he would therefore replace rate controls with an "automatic licensing down" process, whereby the licensed bed capacity of all hospitals is automatically reduced to say 120% of their average daily census over the last three years. Combined with the other pressures, he believes the resulting environment will drive hospitals to overcome the present obstacles to mergers.

To create positive inducements for hospitals to think capacity reduction, a capacity reduction agency (it could even be a temporary coalition of interested parties) would be set up in this strategy, with a much more supportive stance than in the first strategy above. It would have a number of "carrots" available to make capacity reduction attractive to hospitals facing difficulties from the pressures above. The "carrots" would be aimed at satisfying the interests of all the affected parties by other means. For example, the agency could have grants available to buy up hospital debts or to help in job relocation, etc. It could provide technical assistance in arranging mergers, so that the institutional interests of the affected hospitals would be satisfied. It could assist any dislocated physicians and hospital employees find alternative privileges and jobs. It could technically and financially assist the community convert the retired hospital space to other needed and desirable nonhospital services (such as long-term care, social services, etc.), or civic or even commercial use; and the agency could help arrange temporary exceptions to regulatory pressures which might otherwise jeopardize the transition period during which the excess capacity was being phased out.

This strategy could be employed with or without the first strategy above. If the state has passed a statute enabling compulsory hospital capacity reduction, the threat of reduction would simply be one more pressure on hospitals with excessive use and capacity. One way to apply this pressure would be for the state regulatory agency to announce hospital capacity goals for each planning area, giving each area six to twelve months to come up with a plan to achieve these goals. The capacity reduction agency envisioned in this strategy might be separate, or be kept a distinct branch of the regulatory agency, to assure its supportive role.

There are several pitfalls in this strategy. First, the general pressures on excess hospital capacity must not be built up so fast that the hospital sector is disrupted. Not only might patient well-being be threatened, but the disruption could be used to generate political counter-pressure by the hospitals.* Second, the current state of the art makes it doubtful that we can design these general pressures accurately enough that only hospitals with excess capacity experience difficulties; "lean" hospitals with no excess utilization may also feel hardship. This would be particularly true if Derzon's "automatic licensing down" is used. One remedy is to allow for exceptions. The capacity reduction agency should be able to conduct "unnecessary days" audits (see Chapter IV, Method 6) at the request of a hospital; if the number of unnecessary days is found to be low, this hospital could be given more favorable treatment (higher rates, Certificate of Need awards, etc.). Third, there is no guarantee that hospitals which do have excessive use and capacity will retire excess capacity even if the general pressures bring them into financial difficulties. They may try to hang on,* even by sacrificing quality. Vigorous inspection during licensure renewal, and strong persuasive efforts by the capacity reduction agency, will be necessary to prevent creating a string of weak hospitals. Finally, the regulatory pressures must be coordinated if they are not to act at cross-purposes. For example, Certificate of Need agencies will find it difficult to control intensity-capacity if rate controls allow hospitals to develop excessive surplus earnings or borrow capital easily; hospitals will find ways to use this capital to increase capacity. Or, if ill-considered Certificate of Need awards allow proliferation of costly intensive equipment and facilities, hospitals will be able to justify rate increases. As much as possible, these controls need to be pulled together in one authority. The Lewin study (ref 45) has discussed this coordination problem.

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* Insofar as Strategy 1 can be directed against a few specific hospitals with excess capacity at a time, and their closure will benefit neighboring hospitals by increasing patient volume, Strategy 1 may be a politically more quiet approach than Strategy 2 which places more general pressures on all hospitals.

It is not necessary to wait for the imposition of strong regulatory pressures before setting up an assistive capacity reduction agency or mechanism. In many areas, particularly the inner cities, hospitals are under sufficient pressure now that, if technical assistance and grants were available, some of these hospitals might be persuaded to merge and reduce excess capacity. If this fails to make a sufficient dent in rising hospital costs, political pressure will grow to increase the regulatory pressures on the hospitals. Thus this strategy might be initiated by setting up a nucleus agency or coordinated mechanism (be it federal, state or private) with some funds and technical assistance to assist excess capacity reduction, whose role could then expand as the regulatory pressure expanded.

### Strategy 3. Catch Hospitals When They Come In

Currently, virtually all hospitals must come in for some type of regulatory review -- licensure renewal, certificate of need applications, etc. -- over a two to three year period. In this strategy, all such reviews would include examination of the hospital applicant and its area for excess use and capacity, and the leverage of these review processes would be applied to reduce excess capacity at that time. This strategy has been used in Massachusetts with some success (ref 42, 43).

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* This may be happening in New York in the face of strong pressure from the reimbursement rate controls of that state.

The essence of this strategy is "trading down," e.g. forcing hospitals to relinquish excess capacity in exchange for something they want. For example, suppose a hospital maintains an under-utilized obstetrical department in an area with excess obstetrical capacity. Suppose this hospital is also found in violation of building and safety codes. The hospital must apply to the Certificate of Need agency to be allowed to make the capital investment to bring it into compliance with the code. The Certificate of Need agency refuses to consider the application unless the hospital closes its unneeded obstetrical department. A serious threat of closure due to the code violation is likely to persuade the hospital to agree.

The virtue of this strategy is that it uses authorities currently existing in most states. They need only be coordinated. It is also a one-hospital-at-a-time type of approach, and effort can be concentrated on those hospitals most guilty of excess use and capacity. Also, such an administrative approach may be more quiet and more politically feasible than strategy 2, which uses general pressures that may arouse the whole hospital community.

There are at least two disadvantages to this strategy. First, because hospitals come in one at a time, it will be difficult to take a coordinated approach to reducing excess capacity in an area. For example, it may be desired to reduce capacity in an urban hospital and expand capacity at a suburban hospital. Or, if two hospitals in an area are both maintaining under-utilized emergency and pediatric departments, say, it might be logical to have one handle all emergency care and the other all pediatric care. However, if only one hospital is in for review, it may be difficult to arrange the trade. In some cases, the other hospital may be willing to cooperate to avoid antagonizing the review agency, since it knows it will have to come in for review eventually. A second disadvantage is that this strategy requires considerable (perhaps excessive) regulatory discretion. The review agencies will need a competent legal staff to withstand hospital accusations that "equal protection" has been violated. And in some cases the hospitals may be right. For example, some of the experts we interviewed felt that some regulatory agencies had various biases; bias against proprietary hospitals was cited by several.

## Strategy 4. A Private Sector Approach

This strategy would attempt to take advantage of the new and growing interest of business and labor in medical care cost containment. Previously, with a few notable exceptions, business and labor have maintained a largely passive role. When the economy was up, business could pass cost increases in health benefits on in higher prices. And business tended to side with providers in resisting government intrusion into the private health care sector. Labor saw health benefits as a bargaining objective that management could be made to pay, and also identified with hospital employee unions in their efforts to expand wages and jobs. Now this passive role is being questioned. With the economy tight, fringe benefits are not so easily passed on. In a number of areas, business is attempting to work with providers or even oppose them in order to contain costs (ref 64). Labor is finding management less willing to negotiate fringe benefit increases, and sees rising health benefit costs eating into their ability to increase wages and other benefits.

While there are a number of useful actions individual companies and unions can take, most companies and unions acting alone do not have sufficient purchasing power or community influence to exert much leverage over providers in an area. But were they to act in concert, their combined leverage is considerable. This strategy would attempt to bring these large purchasers of care together to reduce excess hospital capacity.

The private sector has a number of advantages unavailable to the public sector, including intimate ties to providers -- business and labor leaders frequently are hospital trustees, businessmen share country clubs with physicians, etc. -- and flexibility to move without the bureaucratic delays and administrative checks inherent in a public regulatory process. Business and labor could educate hospital trustees and physicians to the problems, and bring community physicians and hospitals together to work out solutions. If the savings appeared worth it, business and labor might be willing to provide technical and financial assistance to effectuate these solutions. Reduction of excess capacity would be one such promising solution (see Chapter IV, Method 9). Through national union and business organizations, it could be made a national goal by the private sector.

Further, business and labor could use their concerted purchasing power to enforce decisions. If a hospital or a service department were found unnecessary and the hospital refused to cooperate, these buyers could refuse (and instruct their insurance carriers to refuse) to reimburse services there. There are ticklish antitrust legal issues involved here, but generally if courts find group boycotts in the public interest, they do not hold against them (see Appendix B). And of course labor is generally exempt from boycott prohibitions. Because such a group boycott would be aimed at restoring market discipline in an industry presently devoid of such discipline, a strong legal case could be made.

The difficulty will be putting together the necessary coalition of private buyers. Probably in most cases it will be necessary to have both business and labor in such a coalition, since business is unlikely to jeopardize its labor relations for a 6%-8% fringe benefit cost item. Thus business is unlikely to put pressure on an unneeded hospital unless labor agrees. The coalition must have the support of top management and labor leadership to muster the influence, clout and follow-through necessary for success.

Initiative for such a coalition could come from business and labor leadership within a community or a state, or it could start in national business and labor organizations who would carry the message to the local level. A second nucleus of initiative might be Blue Cross and insurance companies. As mentioned in Chapter III, third party payers are poorly positioned to act alone. Fear of antitrust action (and to some extent industry politics) have inhibited them from working together. On the other hand, these third parties know the health care industry, and have expertise that any coalition will need. If the third parties act at the direction of their business and labor customers, the case for antitrust is weakened. Thus insurers may want to take the initiative, and help business and labor organize. Insurers can then advise the coalition on what directives the coalition should give insurers to help reduce capacity; for example, directives to coordinate reimbursement.

In order to further minimize the risk of antitrust action, a private sector coalition may prefer to work through state and local planning agencies. Government could encourage these efforts, and provide staff and technical assistance through the planning agency. In a sense the strategy might then become the planning agency acting as mediator in negotiations between the buyers and providers of health care, a kind of mixed public utility-private sector approach.

## Strategy 5. Moratorium

If it is not possible to muster the political support to reduce existing hospital capacity, it may be possible to at least declare a moratorium halting all further capacity expansion. In areas with a growing population, a moratorium will effectively lower the per capita bed rate over time. The resulting reverse Roemer effect should then reduce per capita use rates. If the moratorium is to finally affect per capita hospital expense, it must extend not only to beds but to labor and capital assets as well; otherwise intensity-capacity will continue to increase.

The advantage of a moratorium is that it does not threaten or take away capacity from existing hospitals, and it costs the public virtually nothing. Therefore it may be more politically acceptable. The disadvantage of the moratorium is that it freezes-in existing imbalances in hospital capacity. A growing suburb may need hospital capacity, a declining inner city should have capacity removed. A moratorium can only poorly deal with this situation. A moratorium may thus work best as a temporary strategy to halt capacity expansion until a more cogent strategy of excess capacity reduction becomes feasible. Only in a growing area that is already over-built with hospital capacity does a moratorium offer a sensible long-term approach.

It may be possible to partially relieve capacity imbalances under a moratorium, mainly through the "trading down" approach. If a new hospital is needed in a growing suburb, it may be possible to offer a Certificate of Need to relocate to an existing hospital where capacity should be reduced. Or, the Certificate could permit the existing hospital to build the new hospital if it retires an equal amount of capacity at its old site. Where multi-hospital chains exist, this same approach of trading additional capacity at a needed location for a reduction in excess capacity at another location can be used. It may be possible to stimulate mergers, whereby a hospital desiring additional capacity agrees to merge with a troubled hospital with excess capacity; a condition of the merger would be a Certificate of Need granting the additional capacity in return for an equal reduction in the excess capacity.

### Strategy 6. Disclosure, Education and Publicity

Building public support and pressure for excess hospital capacity reduction is so essential to all the strategies above that we devote the whole of Section C below to this topic. It is possible that none of the strategies above may be politically feasible in many states and areas. In this case, a strategy of disclosure, education and publicity to build public support may be the only feasible approach until public understanding is improved.

## B. Collateral Strategies

In Chapter II we suggested a framework of policy options in terms of (1) consumer incentives, (2) provider incentives, and (3) government controls based on a "lid." We suggested that direct excess hospital capacity reduction exemplified the third type of option. We also observed that if direct reduction were used alone and effectively constrained hospital supply, with no attention to discouraging demand, patient queues could develop. Patient queues will not be a particular problem if only under-utilized capacity is reduced. But as capacity is reduced to the point where the reverse Roemer effect begins to inhibit excessive use -- this is the point where real savings begin to occur -- patient queuing could become imporant. Indeed the more effectively excessively-utilized capacity is constrained, the more patient queuing is likely to become a problem. While costs would be contained without threat to health levels by such a strategy, patient queuing could cause considerable inconvenience and create public resistance to reduction. Thus attention should also be directed to demand restraint. The consumer and provider incentive approaches aim directly at restraining demand, and certain kinds of "lid"-type regulation could also help restrain demand. Moreover, since the nation has not come to a consensus on what combination of options it desires to pursue, it would seem wise to initiate actions along all three types of options. These actions could be very supportive of any of the direct excess capacity reduction strategies above, and should be pursued in concert with them.

### 1. Encouraging Prepaid Alternative Delivery Systems

The intrinsic incentives in prepaid delivery systems cause them to use the hospital very conservatively (see Chapter I, Finding 8). The Wausau example (Chapter III, Section B) shows that this drop in hospital use can put pressure on hospitals to reduce excess capacity. To look at it another way, competition from prepaid delivery systems converts excessively-utilized hospital capacity into under-utilized capacity, which under the current state of the art is much easier to identify and reduce.

Prepaid delivery systems can vary greatly in organizational form to fit a variety of local consumer and provider tastes. Examples range from highly organized systems, such as group practice HMOs which own their own hospitals, all the way to loosely organized plans in which an insurer contracts with a limited number of particularly efficient providers, who may or may not be at risk, to provide covered services. Ellwood (ref 75) has coined the term Health Alliance for this latter form of prepaid delivery system; he emphasizes that the Health Alliance, like other prepaid delivery systems, gives consumers a choice among experience-rated providers -- i.e. providers rather than consumers are experience-rated -- and thus reward efficient providers by attracting more consumers.

Where they become prevalent enough, prepaid delivery systems not only can affect demand for hospital services, they can also favorably influence physician distribution. Since their natural incentives lead them to use less hospital-oriented specialists, then as enrollees are drawn into prepaid delivery systems, fee-for-service specialists find fewer patients available. Thus prepaid delivery systems should be particularly encouraged in areas of excessive specialist concentration (a reversal of present federal policy to encourage them in underserved areas).

HMOs, Health Alliances and other prepaid delivery systems will be encouraged by removing obstacles to their formation and growth. Not only are they a complex undertaking in themselves, they are (a) poorly understood and (b) over-regulated compared with their competition. Educational efforts with business and labor should be helpful in increasing understanding. Business may be especially sympathetic that prepaid delivery systems are a private rather than public utility approach. Labor may prefer giving employees a choice of plans, particularly since service as well as reimbursement can be overseen more easily in a prepaid delivery plan. Regarding over-regulation, because prepaid delivery systems have no incentive to over-build and over-use hospital capacity, such controls are not only prejudicial but superfluous. Yet, for example, HMOs are subject to Certificate of Need in most states. The bureaucratic delays inherent in the regulatory process make it difficult for HMOs to balance enrollment with hospital capacity requirements. The simplest remedy would be to exempt any prepaid delivery system from such controls, if it could show that its hospital utilization rates on an age-sex adjusted basis were below the planning goals set for its area. With this remedy, a prepaid delivery system that was performing well would be exempt, and the exemption might be an incentive for physicians and hospitals to try this form of practice. The possibility that a new prepaid delivery system could enter the field would also act as a strong incentive for hospitals to perform well; in a situation of restrained capacity it would otherwise be all too easy for existing hospitals to become complacent and unresponsive to patients. A prepaid delivery system that was not performing well would be treated like any other provider. This would prevent providers from trying to seek exemptions by setting up a facade of prepaid practice.

## 2. Encouraging Consumer Incentives

If consumers are given financial incentives to make less use of the hospital, again this will put pressure on hospitals to reduce excessively-utilized capacity. The most effective incentive would be the imposition of judicious deductibles and coinsurance in current full-coverage policies. The deductibles and coinsurance should be designed to make inpatient care less financially attractive than ambulatory alternatives. A maximum limit should be placed on the total deductible and coinsurance amount that any family was liable for, such that the average family would not be financially strained. For example, a deductible equal to the cost of the first day of hospitalization, and coinsurance of 10%-25% of each day thereafter, up to a total limit of $500 to $1000 per family per year would not be an excessive burden on the average employed family.* But it should cause them to look carefully at ambulatory care alternatives before accepting hospitalization or staying an extra day. (Consumer information, in the form of "Shopper's Guides" showing costs and services of hospitals in an area, would help consumers facing these deductibles and coinsurance to choose an economical hospital.) Business and labor might want to consider such benefit packages as a way to hold health care costs, and government might consider giving them tax preferences.

Some experts have argued that if insurance was extended to ambulatory care as well as inpatient care, the consumer would have no incentive to make excessive use of the hospital. We see little evidence that this argument is valid, and much evidence that it is not (ref 35). Ambulatory care coverage would encourage the same overuse of ambulatory care that is now true for inpatient care. This ambulatory care would not substitute for inpatient care but would be in addition to it, since providers have no incentive to make less use of inpatient care. The approach suggested above appears more valid. Insurance should not be extended to ambulatory care; rather sensible deductibles and coinsurance should be applied to inpatient care so that it does not appear cheaper than ambulatory care alternatives.

The imposition of even modest coinsurance and deductibles will not be welcomed by fully-covered consumers, even though they would benefit from it. Education may help the consumer understand that sensible coinsurance rewards the consumer financially for prudent behavior, whereas under full coverage he has no reward for prudent behavior and is compelled through taxes and foregone wages to pay for the excessive user. The consumer may be more accepting of coinsurance and deductibles if he is given other benefits at the same time. For example, employees could be given a choice between full coverage with or without substantial deductibles and coinsurance. Those choosing the less expensive coverage could be given health insurance coverage for some additional weeks if laid off, or greater major medical benefits, or other fringe benefits such as improved pension rights. (The government could encourage this by cutting off tax subsidies to health insurance policies that cover the first day of hospital care or more than 90% of each day thereafter up to some limit).

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* This level of deductibles and coinsurance would be inappropriate for low income families. But most fully-covered employed groups do not have low income families and, with median income now about $14,000 per year, could easily tolerate coinsurance and deductibles of this order of magnitude.

### 3. Lid-oriented Regulation to Restrain Hospital Demand

There are a number of regulatory measures, based on lids, which might restrain hospital demand. These measures recognize that under insurance, excess demand has two sources (1) consumer-initiated demand, where in the face of artificially low prices consumers are excessively willing to enter and remain in the hospital, and (2) provider-induced demand, where in the absence of consumer resistance, and assured of reimbursement, providers are free to recommend costly styles of treatment when lower cost styles would suffice.

-- National ceilings on physician and specialist manpower. As noted earlier, the U.S. is currently training new physicians at a rate projected to increase the overall number of physicians per 1000 population by 50% -- and to nearly double the number of surgical specialists per 1000 population -- by 1990 (see Chapter III, Table 1). Under third party insurance there will be little market restraint on the new hospital-oriented specialists piling up in professionally attractive areas (as they do now) and aggravating excess hospital use, perhaps stimulating demand for even more hospital capacity. While compiling the research on physician behavior is beyond the scope of this report, there is evidence that physicians are underutilized (services per physician are low) in areas where they are concentrated, and that they maintain incomes by charging higher prices; total expenditures in such areas rise not only from this price increase but because the greater number of physicians generates more total services (services per 1000 population are high).

This physician-induced demand for hospital services could be dampened by holding down the physician to population ratio and particularly the specialist to population ratio. A well-organized medical care system can effectively serve a typical population with 1.3 physicians or less, per 1000 population, of whom at least 50% are in the primary specialties.* Thus the present U.S. average of 1.6 physicians per 1000 population, over 60% of whom are non-primary specialists, seems more than safe to maintain as a ceiling.

The federal government could restrain production of new physicians by (1) restricting immigration of foreign medical graduates to the

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* Note, these figures are estimated by generously adjusting HMO data to allow for a more typical population. Mature HMOs serve their enrollments at roughly 1 physician per 1000 enrollees, at least 60% of whom are in the primary specialties of general and family practice, internal medicine, pediatrics, and OB-GYN. To allow for under-representation of aged and high risk pesons in HMO enrollments we made adjustments as in Chapter I, Section F, increasing the number of specialists by 50% from 0.4 to 0.6 per 1000 persons, and increasing the number of primary physicians by 15% from 0.6 to 0.7 per 1000 persons. These adjustments appear to allow a very generous margin of safety on the high side.

U.S., particularly in the hospital-oriented specialties; (2) by conditioning federal support to medical schools upon their reducing class sizes (a reversal of recent federal policy); and (3) particularly by conditioning federal support to very severely restrict residencies in the hospital-oriented specialties. (Especially if the first two measures to restrain overall physician numbers are not pursued, the third measure should be vigorously pursued to keep these new physicians from excessively entering hospital oriented specialties. Medical curricula could also be encouraged to include training in home health care and other alternatives to inpatient care.) These restraining measures could continue until projected physician and specialist to population ratios fell below the ceilings specified above.

-- Performance-related regulation of inpatient fees (quasi-lid fee controls), and other physician redistribution measures. The previous measures might restrain overall numbers of hospital-oriented specialists. However, without further action, there is little reason to suppose that specialists will be any better distributed geographically than now, aggravating excessive hospital use in areas of specialist concentration. In areas where specialists are excessively concentrated, they are apparently underutilized and services tend to be poorly prioritized as each professional attempts to find things to do for patients. In areas with fewer physicians, each physician is much busier, and is more likely to prioritize his time to deal with patients who most need his services. (For example, a busy gynecologist has little time or need to engage in borderline D and C's and hysterectomies when medication would suffice.)

The basic strategy to redistribute physicians is to make overserved areas less professionally attractive and underserved areas more attractive. To make overserved areas professionally unattractive, we suggest the following untried concept: Fees for inpatient physician services could be restricted in all planning areas where per capita hospital expense and use exceeds specified ceilings ("lids"). Inpatient physician fees would be left alone in areas where ceilings were not exceeded. This regulatory concept, in which regulation is based on performance falling within a specified ceiling, we have termed "performance-related regulation" or "quasi-lidding."*

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* Note, under a true public utility system with a lid, government would actually control all reimbursement dollars and allocate them out subject to a budgetary ceiling. Under the "quasi-lid" concept, the government does not necessarily control all dollars, but it keys all regulatory measures at its disposal to provider performance staying within specified ceilings on per capita expense and use. Providers who stay within these ceilings do not get regulated; providers who exceed the ceilings are regulated with increasing stringency until performance is brought down to the ceiling. Thus quasi-lid regulation is an intermediate step between present regulation and a true public utility lid approach.

The virtues of quasi-lid regulation are that (1) providers are explicitly informed of what the government expects, i.e. their performance is expected to stay below the specified ceilings; (2) providers are given every chance and strong motivation to perform well, and to make private sector market forces (cost sharing, prepaid delivery systems, private insurer controls, etc.) work, so as to avoid regulation; (3) regulation is minimized to where it is needed, i.e. where cost and use exceed ceilings, and its objectives are known and measurable; (4) regulation is consistent with encouraging consumer market strategies, since insurance plans and prepaid delivery systems that stay within the ceilings escape regulation; and (5) if better performance fails to emerge in the private sector, it points regulation in the direction of a lidded public utility system.

Quasi-lid inpatient physician fee controls could be implemented in practice by states directly imposing fee schedules on inpatient physician fees (or alternatively, by imposing reimbursement schedules upon insurers and requiring physicians to accept total assignment of insured services) in just those planning areas where ceilings are exceeded. By tying inpatient physician fees to ceilings on per capita hospital use and expense, physicians would be motivated not only to watch each other's performance but to watch hospital performance as well. This could be a powerful incentive, now absent, for physicians to make PSROs and HSAs work. And if the fee controls became severe enough, it might motivate some hospital-oriented specialists to shift to ambulatory care or even to move to underserved planning areas to escape regulation.

To make underserved areas more professionally attractive, first, under quasi-lid controls, they would be unregulated. A second measure that might help is to encourage multispecialty group practice and other organized delivery systems to set up branches in underserved areas. Thus physicians in underserved areas would no longer be professionally isolated nor unable to find a back-up replacement when they wished to take a vacation or relocate. The potential for success of this strategy is suggested by such examples as the Marshfield Clinic, the Daniel Boone Clinic or even the Mayo Clinic, which have managed to draw and hold highly qualified doctors in what might otherwise be regarded as rural and smaller cities indifferently attractive to physicians.

-- Mandatory cost-sharing based on performance. The above measures attempt to alter physician-induced demand by regulation. The following speculative regulatory measure, based on the quasi-lid approach, might be aimed at consumer-initiated demand. Insurers and prepaid delivery systems would be required to disclose per capita hospital expense and use for their subscribers in each planning area. In any planning area where subscribers' per capita expense and use exceeded specified ceilings adjusted of course for the age, sex and perhaps other risk factors of the insurer's subscriber population in the planning area), that plan would be required to impose specified deductibles and coinsurance in its hospital benefits. This mandatory cost-sharing could be annually increased until expense and use fell below the ceilings. The mandatory increased cost-share would motivate consumers to join better performing insurance and prepaid delivery plans that were not so regulated. And insurers and prepaid delivery systems would be motivated to exercise controls over providers to avoid having mandatory cost-sharing imposed.

As a more extreme but equitable step, government could require insurers to adjust the cost-share in each planning area, such that average hospital benefits paid out per subscriber were no higher in planning areas with high hospital expense and use than in areas with low expense and use. Thus insurers could not subsidize subscriber premiums in high cost areas out of premiums from low cost areas. Subscribers in high cost areas would begin to more directly bear the true costs of excess hospital use and capacity in their area, which might then begin to generate public pressure in that area for reduction of excess capacity and use. As long as true costs are hidden from subscribers by insurance and taxes, there is little financial incentive for such public pressure (for further discussion, see Section C.4 below).

## C. Strategies to Build Public and Provider Support for Excess Hospital Capacity Reduction

Given the present climate of public and provider understanding and opinion, none of the strategies above will be politically easy to implement. We emphasize that Canada and England, with staggering regulatory authority over their hospitals, have had only slow and limited success in reducing excess hospital capacity. The United States has not been able to close eight Public Health Service hospitals, entirely under federal jurisdiction, after five years of trying. And the city of New York, facing extreme financial duress, has just begun to close significant excess hospital capacity. In all these cases powerful political constitutencies have risen up to resist reduction. At heart, excess hospital capacity reduction is first a socio-political problem, and only secondarily a technical problem. The most sophisticated technical methods in the world will not avail if the socio-political problem is not resolved. In this section we look at strategies to build a supportive climate of opinion for excess capacity reduction.

### 1. Identifying Constituencies: Who gains and who loses

The constituencies that must be reached, and the arguments and interests that must be appealed to, by such a strategy are revealed by analyzing who gains and who loses from capacity reduction, and who has the power to retire capacity and how the affected constituencies are likely to resist. The big winner in capacity reduction is the general public.

An enourmous amount of resources devoted to excessive hospital care are freed up for other pressing needs and priorities. There is also great potential to produce a more organized and effective hospital system. But the general public is everybody and therefore nobody. And because the mechanisms for paying hospitals -- fringe benefits, insurance and taxes -- are so indirect, the general public has difficulty seeing the savings created; but it can immediately feel the effects of queuing, of traveling further, and of public conflict which capacity reduction may entail. The interests of the general public are too diffuse to easily mobilize as a specific counterweight to affected special interest groups. Nevertheless, general public support will be crucial. Therefore special interest group "winners" must be identified who can help mobilize public opinion.

The special interest group with the most to win are the payers -- *labor, business and government*. However, each faces obstacles which must be handled gingerly. Labor leaders have long regarded health care as a very visible benefit they have won for their members. They do not want to appear to members as allowing these benefits to erode. Labor also identifies with hospital employee unions. Business will not want to jeopardize labor relations over a fringe benefit, even a very expensive one. Hospital suppliers find hospitals profitable customers, and bankers are finding hospitals to be profitable borrowers. And many business and union leaders serve as hospital trustees and are personally invested in their hospital's success. Government is the ultimate arena for special interest groups, and in the absence of consensus finds it difficult to pursue a consistent long-term approach to anything. Nevertheless, if business, labor and government become convinced that excess capacity reduction is in their best interests, they have immense leverage to mobilize public opinion. Moreover, excess capacity reduction is a direct, understandable, readily perceivable action they can take, not requiring excessive intricate knowledge and effort. Because all three are now feeling the crunch of rising health care costs, it is crucial to reach them and provide specific ammunition and suggestions for steps they can take.

*Hospitals* and physicians are mixed winners and losers. Hospitals which are to be closed entirely will usually fight for their institutional life. (This is why mergers are so important a tool in capacity reduction.) Hospitals which are forced to merge lose their previous autonomy; their administrators and trustees face uncertainty and possible loss of authority and status. The civic or religious sponsor faces loss or compromise of a very visible, powerful asset symbolizing its mission to "do good." The proprietary sponsor loses or compromises an investment and earnings. Hospitals forced to retire prestigious service facilities face loss of morale and pride, and are at a competitive disadvantage for patients and medical staff with respect to hospitals permitted to offer prestigious services. On the other hand, the remaining hospitals, and hospitals which merge to form a sufficient patient base to support prestigious services, after excess capacity reduction are real winners. *Should excess capacity be reduced, hospitals should find that their patient and financial base is larger and more secure, their negotiating position with their medical staffs* is strengthened, and -- presuming the lid is kept on capacity -- they do not have to worry about other hospitals jumping out of line and stealing a march on them. Further, the hospital community faces an inevitable situation. The more they resist excess capacity reduction, the more detailed and stringent regulation will eventually be enacted to reduce it; there is little likelihood that this regulatory apparatus will be dismantled after capacity is reduced. If the hospital community can facilitate excess capacity reduction, it can avoid much of this excess regulation.

Physicians will lose some autonomy in any future medical system which can credibly contain costs, no matter what cost control option is chosen. If the physician community can grasp this fact of life, both they and society will be immensely better off in moving toward the future. Physicians presently face negligible market discipline; cost containment, which is inevitable, means establishing cost discipline, whether market or regulatory. But the physician community has real options as to whether such discipline will be private or public. Like the hospitals, the longer the physician community resists change, the more draconian the public regulation is likely to be. Once the physician community gets beyond the fight over change versus no-change -- a war already lost -- it can stop retarding and start encouraging constructive, private steps to restore cost control discipline. Pious pronouncements about self-discipline will be neither effective nor credible. But positive steps to encourage consumer cost-sharing, prepaid alternative delivery systems, and/or excess hospital capacity reduction will restore effective discipline and retain maximum professional autonomy. Prepaid delivery systems may in fact offer the maximum physician autonomy consistent with cost discipline. But excess capacity reduction also offers considerable physician autonomy. The regulation tends to fall on the hospital rather than the physician. And under reduced hospital capacity, the physician works out cost-effective priorities with his colleagues on the medical staff and his hospital rather than with a public regulatory apparatus. If physicians will facilitate excess hospital capacity reduction, they may forestall more direct regulation of physicians.

Insurers stand to lose some dollar volume if excess capacity reduction effectively reduces per capita hospital expenditures. On the other hand, with the prospect of national health insurance, insurers must show that they can offer some help in controlling hospital costs. Otherwise they may be out of the business altogether, except in a steadily diminishing intermediary role. Blue Cross may feel the most pressure since health insurance is its only business. Insurers thus have a substantial stake in any effective cost control strategy that does not deal them out. They may therefore wish to take a strong lead to deal themselves into excess capacity reduction. If insurers do so, they can help mobilize business and labor, and provide them expertise to deal with hospitals.

Communities with excess hospital capacity are more likely to perceive visible losses than to see the less visible gains. First of all, communities bear little cost burden for the excess hospital capacity they build. Insurance premiums and taxes tend to spread the cost burden so that communities with low capacity are subsidizing those with high capacity. (For example, a Vermont company with plants in both the high cost and low cost areas of Chapter I Table 7, will usually put in the same premium for employees in both areas; thus employees in the low cost area are subsidizing the high cost areas.) This subsidy effect exists in most private group insurance. The same effect tends to nullify the redistributive impact of Medicare and Medicaid. (For example, Chapter I Table 7 shows that Medicare pays $450 in benefits for beneficiaries in the Northeast but only $319 for beneficiaries in the South.) On the other hand, the community that has its excess hospital capacity cut back sees very visible losses: loss of a source of community pride and employment, loss of a possible attraction to bring in new employers, and increased travel and waiting time to the nearest hospital. A number of our interviewed experts remarked on the consequences to this for planning decisions: Because the benefits are divorced from the costs, planners find that consumers on local advisory planning and certificate-of-need committees seldom can refuse any requested hospital capacity increase. This would be analogous to asking local school boards to decide the education program without having to be responsible for the resulting budget (or knowing that the budget will be borne by others outside the school district.) For the community with several hospitals, capacity reduction will not have so critical an impact. For communities with one hospital, capacity reduction will have the virtues and vices of the consolidated school: it may be further away but there's more when you get there.

The actual power to reduce a hospital's capacity resides in (1) the state government, which can reduce or revoke its license; in (2) the physician community, who if seriously united could refuse to practice there; in (3) the group buyers and third party payers, who could refuse to reimburse services there; and in (4) the hospital's governing board, who could decide that closure or cutting back capacity was in the public interest. On the other hand, hospitals resisting reduction efforts will turn to the courts, to friends in the legislature, to the community, to other providers and to the public. The resolve of state government, providers and hospital trustees will critically depend on business, labor and public support as a counterweight to hospital and community resistance.

### 2. Educating Constituencies: Social Marketing

From the above discussion, a strategy to build understanding and support for excess hospital capacity reduction must reach the following constituencies:

- It must convince the public and national, state and local policymakers that excess hospital capacity reduction is legitimate, safe, necessary, and desirable.

- It must convince hospitals and their trustees, and physicians, that excess hospital capacity reduction is legitimate and inevitable, and that their own and their patients' best interests will best be served by facilitating and guiding reduction rather than resisting it. Providers will have to put identifiable funds and manpower to this effort if it is to be effective.

- It must convince business, labor and insurers that it is legitimate, feasible and desirable for them to enter into concerted efforts to educate the public and facilitate capacity reduction. The private sector must devote identifiable funds and manpower to this effort if it is to be effective.

- It must convince the courts that excess capacity reduction is in the public interest and not a restraint of trade, and that it can be accomplished by fair and due process.

Excess capacity reduction must be legitimized to the public, providers and policymakers. Legitimacy will result from (1) accurate information (2) issued by respected and authoritative sources (3) being widely disseminated in (4) readily understandable and communicable forms (5) to each of the relevant audiences. Because all the technical methods to reduce excess hospital capacity (and to restrain excessive demand) require perhaps unwelcome change and accommodation by both providers and consumers, the educational effort might best be staged in successive phases. The first phase could concentrate on explaining the problem rather than the solution, since people are unlikely to agree to troublesome solutions until they have reasonable common agreement on the problem. Moreover, the first phase might stress first the problem of excess underutilized capacity, since people are more likely to agree on that than on the more controversial issue of excessively-utilized capacity. The case for excessively-utilized capacity might be built up over a longer period. Similarly in the second phase, once there is growing public understanding of the problem and pressure for a solution, measures to reduce idle capacity can be publicized first, and measures to reduce excessively-used capacity can be publicized over a longer time frame. If measures to reduce idle capacity can successfully initiate a trend of support for reduction, the battle to reduce excessively-used capacity will be half-won (see Chapter IV, Section C).

To make accurate information readily accessible, the research of the last fifteen years relating health, hospital use and capacity must be compiled in comprehensive review articles and reports. Chapter I represents a start on such reviews. Review articles should not only include critical scholarly reviews defensible to the research community, but review articles written in jargon-free language tailored to lay and provider audiences.

To give this information authority in the eyes of the non-research community, it must be issued under the auspices of respected authorities. The respected Institue of Medicine is preparing a report* recommending excess capcity reduction, which will be extremely helpful in this regard (ref 67). Other respected institutions, or blue-ribbon committees advisory to the Secretary of HEW or the Assistant Secretary for Health, could be commissioned to study and report on excess hospital capacity. At an appropriate point high officials, such as the Secretary of HEW, the Assistant Secretary for Health, state governors etc. could issue various "white papers" stating their administration's intent to reduce excess hospital capacity and citing the evidence to support this policy. Congressional and state legislative hearings on excess hospital capacity can provide a respected public forum. States, planners, providers, insurers, business and labor will be able to point to such respected sources in support of capacity reduction efforts.

The various audiences can be reached by a variety of means: articles and reports in various media reaching each audience; conferences; and informal "jawboning." Skilled public-relations professionals should design a coordinated strategy. The more high-ranking the official or hearings discussing excess hospital capacity, the more newsworthy and widely-reported the subject will be. Articles can be written for the provider, business and labor trade media. Conferences could be sponsored for providers, planners, hospital trustees, and business and labor leaders. The preparation of good educational materials would aid such conferences. Quiet, informal jawboning by public officials with business and labor leaders, hospital and physician leaders, etc. could communicate government's intent and support for efforts to reduce excess capacity. In turn, business, labor and insurers have enormous leverage to reach employees, providers, hospital trustees, legislators and communities, through formal and informal means.

A second type of education information could also produce pressure on excess hospital capacity. This is disclosure by hospitals and insurance plans of pertinent performance statistics. Presently public and private leaders have very poor knowledge of which areas and hospitals have excess hospital use, capacity and expense. If key comparative statistics on population-based capacity, use and expense rates were made available and publicized in simple formats understandable to the lay reader, private and public leaders would be able to tell which hospitals and which planning areas had excess use and capacity, and exert some timely leverage. Insurance subscribers and taxpayers in low cost areas would begin to realize their premiums and taxes were subsidizing subscribers in high cost areas, and might begin to press for capacity reduction efforts in high cost areas. The publicity would itself be an embarrassment to poor performers, and progress or lack of progress would be clearly visible. Tables 7 and 8 in Chapter I provide a start on the nature and format of disclosed statistics.

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* I am grateful to the Institute's study committee and its staff for the opportunity to exchange thoughts and findings.

Court challenges can be handled by (1) having good state legislation solidly establishing the intention and necessity for public intervention to reduce excess hospital capacity, by (2) having equitable criteria and regulatory procedures to do so, and by (3) having competent legal staff to defend reduction. Preparation of model state laws and regulations, and of legal review articles on the legal issues and arguments involved, could help forestall court actions as well as expedite state action. But, in the end, the resolve of a state legislature to pass such legislation comes down to public support.

## 3. Reorienting and Educating the Public Media

There is a great need to educate and reorient the public media on the whole issue of health care and health care policy. The press and especially television have not been given adequate exposure to the findings of health services research and policy analysis. It appears that medical reporting is too often left to science reporters and investigative reporters, rather than to economic and social science reporters who can interpret the broader issues. Science reporters tend to herald each new technological discovery without asking even elementary questions about costs and health priorities; they tend to attribute cost escalation to "cost-push" factors beyond the control of providers, rather than to "demand-pull" factors which health services research shows to be dominant. Investigative reporters looking at health care cost escalation tend to emphasize fraud and corruption; they can always find substantial examples in any $100 billion a year industry, and divert attention from more fundamental issues.

The public thus receives a distorted view of the problems in its health care system. Public attitudes of "more is better" and "everything for everybody" are reinforced and romanticized, and cost escalation can be attributed merely to villains and more expensive medical marvels. With such a picture the public will not be able to understand that the health care system is misperforming exactly the way society has structured and rewarded it to misperform. The public will not see that its own expectations -- its desires for the last word in medical technology, for instant availability of medical care, and at the same time, for comprehensive health insurance with deductibles or coinsurance -- are at the root of the problem and will have to be changed. And the public will have difficulty weighing the important cost-benefit decisions between adding high style technology and improving basic health care, and between medical care and other programs that impact health.

Part of the difficulty of inadequate media coverage is that health services research is a new and relatively small-budget field. Biomedical research is a large, well-established field, and has established public relations channels with the media. Economic and social science reporting in the health field is also new, and the number of reporters with the necessary background are scarce relative to science-oriented and investigative reporters.

Media coverage will be improved as health services research programs and policymakers recognize adequate public relations as an important responsibility, and as the media are helped to recognize that their present reporting is inadequate. Newsworthy health services research findings must be given the same professional public relations treatment as biomedical findings. Government can make sure that publicly-supported health services research findings are disseminated not only to the research community but to the media. Public relations professionals in the insurance industry can facilitate such dissemination. Business leaders can informally prod their colleagues in the media industry to do a better job. Training seminars for reporters in the health care field could be put together by a variety of private and public sponsors. Such steps should result in more informed reporting to a more informed public.

### 4. Giving Local Communities a Cost Stake in Local Excess Hospital Capacity

As long as individual communities bear little direct cost burden for permitting excesses in local hospital capacity, they will have little incentive to behave responsibly in its control. Ways must be found to make local health care cost burdens more proportional to the amount of local excess hospital capacity. (This is particularly critical the more that public utility controls are exercised at the community level.)

There are several means to do this. HEW or states could promulgate standards for excess use and capacity (for example, a maximum of 1200 patient days and 4.0 beds, per 1000 population, adjusted for age, sex and out-of-area use). The Medicare deductible or Part B premium could be adjusted upward in areas where this standard was exceeded. The Medicaid federal matching percentage to states could be reduced proportional to the state population living in areas exceeding the standard. State insurance commissions could require insurance companies to adjust their premiums or deductibles upward in areas exceeding the standard. Federal and state grants and aids could be reduced in areas exceeding the standard.

Such measures will be politically unpopular. They would reverse the present trend of taking cost responsibility away from local communities. Most communities perceive having the state and federal government assume local cost burdens as a kind of "free lunch." It is not. Since local discretion cannot be trusted where there is no local cost responsibility, this trend merely guarantees that any future public utility approach to health care policy will eventually have to have maximum centralized authority to work well.

Placing a cost stake at the local level does not mean that federal and state mechanisms to redistribute health care costs more equitably among rich and poor communities should be abolished. Rather, any such mechanism should always leave some reasonable share of cost responsibility at the local level, commensurate with the degree of local discretion granted. Of course, rich communities may be willing to spend more locally to enjoy more local hospital facilities. If such imbalances appear to threaten equity among rich and poor communities, the above methods can be further modified to take local income into account.

## D. Technical Methods to Reduce Excess Capacity

This section briefly catalogs the technical tools which could be employed in the strategies listed in Section A above. These tools are somewhat arbitrarily divided into "sticks" (i.e. coercive controls and negative incentives) and "carrots," (i.e. positive incentives or rewards). If excess hospital capacity reduction is not to appear as a wholly negative exercise, as much attention must be given to the "carrots" as to the "sticks."

STICKS:

### 1. Restricting Capital Flow into Excess Hospital Capacity*

The fuel of excess hospital capacity growth is capital. In Chapter III we reported the findings of Bice and Salkever that Certificate of Need controls had caused some reduction in the growth rate of bed-capacity but had not stemmed the flow of capital formation and investment; capital had merely been shifted from beds to sharply increased intensity-capacity. Certificate of Need controls may therefore be likened to a dam, behind which a flow of capital is building up. It is not enough to put up dams on how this capital can be spent; the flow of capital into the hospital sector must be staunched or else the accumulating capital will find ways to leak around these dams and get spent on high cost-generating equipment, facilities and procedures. Indeed the whole intent of excess capacity reduction may be frustrated unless the flow of capital to hospitals is well controlled.

Hospitals can develop capital in several ways, most of them presently uncontrolled. First, capital can be developed from reimbursement allowances specifically for depreciation and capital funding. This is a recognized cost under Medicare and Blue Cross, although under Section 1122 Medicare can deny this cost item for service facilities not approved by the local or state planning agency.

Second, capital can be developed out of the surplus of hospital income over expense. Reimbursement controls, where they exist, can squeeze income from patient services, but hospitals have many other ways to earn income which are only poorly controlled by methods focused only on patient costs. Income is derived from research projects, educational endeavors, subsidies, sales of space and service to on-site concessionaires, sale of services to other hospitals and institutions, gift shops, television and prosthetic rentals, telephone charges, etc. Unless total revenue of the hospital is accounted for as strictly as its costs, the resulting surplus represents an uncontrolled source of capital.

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* I am indebted to Dr. Andrew Fleck, New York State Department of Health for much of this discussion (see ref 11).

Third, capital can be developed by soliciting charitable funds and by borrowing, including selling bonds and taking out loans. Increasingly hospitals are using debt as charity becomes inadequate to meet the capital demands of new technology desired by providers (ref 20). Interest on indebtedness is a recognized and rapidly growing operating cost.

Fourth, capital can be developed by complicated arrangements such as chattel mortgages, leasing, and sale and leaseback agreements. Leasing may be particularly troublesome. In essence it converts capital costs to operating costs; the lessor accumulates and invests the capital entirely outside the purview of existing controls, and the hospital lessee pays for the use of the capital by a lease fee which is recognized as an operating cost. In fact leasing is generally more expensive than borrowing (hospitals can frequently obtain favorable interest rates). But hospitals find leasing and sale/leaseback arrangements attractive because front-end capital is obviated and because almost no present controls restrict lease costs whereas some limitations are placed on interest costs and depreciations. Moreover, since leasing never appears as a capital expenditure, leased equipment often escapes Certificate of Need review. (Certificate of Need does demand a review of significant changes in service offerings, which might catch this type of increase in intensity-capacity, but this is an ambiguous requirement.) To staunch the flow of capital from these proliferating wellsprings will not be simple, but will be necessary if excess hospital capacity reduction is to have any effect on containing per capita hospital costs. The intent is not to dry up and stop all capital formation; hospitals need capital. The intent is to make capital formation visible and controllable. The following measures may be useful.

Education and Pressure on Lenders. Both government and private sector leaders can attempt to educate lenders that the loan of capital to increase already excessive hospital capacity is both socially undesirable and financially risky -- risky because government and the private sector will eventually be putting a squeeze on excess capacity. Especially private sector leaders carrying this message within their own community could do much to discourage the loan or gift of capital to hospitals. However, there will always be lenders somewhere who will ignore such messages, and expansionist hospitals who will find them. Perhaps the most powerful tool to discourage lenders is to extend Certificate of Need approval to existing as well as new service facilities. (P.L. 93-641 gives HSAs review but not approval powers over existing services.) Lenders facing the risk that a hospital's present earning power might be curtailed in the future will be much more cautious in lending capital to hospitals. The power of this pressure is exemplified by the New York City experience (see Chapter III, Section B).

Reduction in Federal Loans and Guarantees. It should be noted that the Federal government itself is one of the largest lenders and guarantors of hospital loans. The three principal sources of Federal money and guarantees are HEW, the FHA in HUD, and, much smaller and restricted to rural hospitals, the Farmer's Home Administration in the Department of Agriculture. HEW presently holds 65 direct loans to hospitals totaling $157 million and is guaranteeing 245 private loans totaling $1.1 billion. The FHA has 112 commitments totaling $1.2 billion, and has 44 more applications in the pipeline not yet approved for $889 million. Clearly if the Federal government wishes to restrict excessive capital from flowing into the hospital sector, it must curb itself.

Controls on Hospital Surplus Earnings. Reimbursement controls have generally focused on hospital costs. Controls must also focus on revenue, from whatever source. At a minimum this revenue should be reported, and the disposition of any surplus above costs should be accounted for. At a maximum, the use of such surplus might be restricted (for example, placed in a visible capital fund which could not be used for operating deficits). Reimbursement rates, particularly for depreciation, might be reduced proportional to such surplus. We do not have great confidence in such reporting and controls; hospitals can find many ways to hide surplus earnings in higher operating costs. Nevertheless, making revenues, both realized and accrued, visible by disclosure should be useful.

Controls on Capital Formation. If capital formation by hospitals is to be controlled, then the ways that hospitals can raise capital should be restricted. The control should be exerted before the capital is accumulated as well as when it is invested, a failing of most present controls. For example, Certificate of Need could be extended where necessary to review any proposed sale of equities, chattel mortgage, loan, or charitable solicitation or gift before it occurred rather than at the time the capital so accumulated was invested. A hospital would have to apply to the Certificate of Need agency and justify how the capital so collected would be expended. In general, such capital should not be permitted to finance operating deficits; otherwise reimbursement controls will be defeated. The Certificate of Need agency should not only review the need for such expenditures (need is bottomless but money is not), it should also review their effect on increasing operating costs. An excessive rise in operating costs should be grounds for denial. (Certificate of Need and reimbursement controls must therefore be coordinated.)

Certificate of Need could also extend to leased equipment and facilities. Any hospital proposing to lease equipment or service facilities, otherwise covered by the Certificate of Need statute had the hospital purchased them directly, should have to apply for Certificate of Need approval before contracting such a lease. Section 1122 should extend denial of depreciation and interest costs to leasing costs for equipment and service facilities not in accord with the state or area health plan. Other third parties could be required or persuaded to observe such denials in reimbursing hospitals. These sanctions should be extended to any service facilities and equipment, whether purchased or leased, located in physicians' offices which would be covered by Certificate of Need if located in a hospital. Otherwise physicians will simply build up in their offices, capacity reduced in hospitals.

If hospitals are thereby forced to bear the impact of unwise capital decisions, this will tend to alter their behavior. Similarly, such controls should have a very discouraging effect on leasers and lenders; there is evidence that Certificate of Need and Section 1122 have already had such an effect on borrowing (ref 45).

New and existing HMOs and other prepaid delivery systems, because they have no incentives to over-use capital, should be exempted from such controls. This will act as an incentive for prepaid delivery systems. On the other hand, hospitals should not be allowed to obtain equipment and facilities under the facade of an HMO or other prepaid delivery arrangement which are then used principly for fee-for-service patients. Discovery of such practices should result in retroactive penalties. Exemption could be based on the capital acquisition being utilized by at least 75% prepaid enrollees. Similarly, hospitals which can prove that they are "lean" should be granted exceptions as a reward for their good performance. If the hospital or HMO fails to continue acceptable performance (utilization and capacity within planning targets), the exemptions and exceptions should be revoked.

Common Capital Fund. One suggestion to control the use of capital is a required pooling by all hospitals of all or part of their individual capital funds. A specified portion of each hospital's reimbursement, equivalent to some fraction of its recognized allowable capital and depreciation costs, would be paid into the common fund. The Certificate of Need agency or other mechanism would dole out amounts from the common capital fund to consenting hospitals for approved capital improvements to provide specified needed services in the community. Awards from the common capital fund could also be used to reward hospitals who performed well. At the extreme, this pool could be made the only allowable source of capital; all gifts, loans and leasing to individual hospitals would be forbidden. We suspect this tight a control over capital would prove bureaucratic and stifling to innovation.

## 2. Licensing Down

By "licensing down" is meant reducing hospital capacity by reducing or revoking a hospital's license. Beds, service departments, or whole hospitals could be retired by licensing down. Any of the methods of Chapter IV can be justification for reducing licensed hospital capacity if it is included in the state's licensure or other law as a criterion for that purpose.

If the state wishes to close whole hospitals and service departments (Chapter II suggests this has the greatest economic impact), the statute should state this objective as well as the criteria. Obviously, in multi-hospital areas, no single hospital has all the excess capacity in an area;

therefore the law must instruct the regulatory agency to choose for closure those hospitals and those service facilities which most nearly satisfy all the criteria. If the planning and regulatory process for arriving at these choices is spelled out by the statute, the chances of an affected hospital successfully challenging the regulatory decision on the grounds of denial of "due process" and "equal protection" are minimized. Zaretsky has suggested the use of a decision tree in arriving at these regulatory decisions; a preliminary version is shown in Appendix C. Other criteria could be included in this decision tree.

Just because retiring whole hospitals and service departments has more economic impact does not mean that retiring excess beds in individual hospitals should be ignored. Two effects make this worthwhile. First, the reverse Roemer effect will result in the remaining beds being used less. Second, the resulting smaller hospitals are more likely to seek mergers, which could allow further capacity reduction. Because beds are an ambiguous measure of capacity, one can never be sure just how much capacity is retired when reducing beds. Perhaps the best that can be done is to reduce the licensed bed complement* and shell-in or convert an equivalent amount of space.

Closing an entire service department or hospital will always involve a judgmental regulatory process. Reducing total licensed capacity of hospitals could be performed either through a judgmental regulatory process or by more "automatic" non-judgmental methods. In a judgmental process, the amount of capacity to be reduced would be decided by the regulatory agency for each individual hospital based on the statutory criteria. The disadvantages are that such judgmental processes are time consuming, much regulatory discretion is involved, and decisions are vulnerable to political pressures and undue influence and capture by the affected hospitals.

An "automatic" licensing down process attempts to avoid judgmental decisions on individual hospitals. One approach, suggested by Derzon (see Appendix D), is to reduce the licensed capacity of any hospital to a fixed multiple (120% say) of its average daily census over the last three years, and not allow an increase in capacity until its occupancy had exceeded a set standard (90% say) for three years. The specified multiples and occupancy standards for this automatic process should take into account the amount of excess use and capacity in the local area; they should be made more stringent where several hospitals are available in the area. Derzon's approach only gets at under-utilized capacity and not excessively-utilized capacity.

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* The number of days that a hospital's daily census could exceed 100% of its licensed bed complement would have to be limited and enforced. One could also look closely at variations in daily census to determine if a hospital was scheduling and staffing well.

A second "automatic" method aimed at excessively-utilized capacity is to require an across-the-board capacity cut (say of 10% over five years) in all hospitals in an area where per capita hospital use and expense rates exceed some specified planning standard (say 1300 hospital days and/or $180,000 per 1000 population). The specified standard should take into account the demographics of the area and out-of-area use, and the mix of service facilities required. A second cut could be made if goals were not achieved. This method and the one above could be used together.

Any "automatic" approach suffers two disadvantages. First, it is difficult to single out and reward "lean" hospitals having little excess use, thus producing perverse incentives (see Chapter IV, Section E). Second, it is difficult to take into account local characteristics that could produce undesirable side-effects (see Chapter II, Section C); for example, "automatic" licensing down might aggravate existing urban-suburban imbalances. Thus an exceptions or appeal process may be necessary. The introduction of exceptions, of course, begins to reintroduce the judgmental factor which the automatic methods are supposed to avoid. There is no ideal resolution of this issue. Policymakers and regulators must choose the combination of "licensing down" methods best suited to their situation.

"Automatic" licensing down is probably best used as a one-shot legislative action rather than a continuing one. After such an action, tight Certificate of Need and capital controls could keep capacity in check. In assessing whether to use "automatic" licensing down, policymakers and planners should first consider how many entire hospitals it would be desirable and feasible to close; otherwise automatic "licensing down" may remove excess capacity in neighboring hospitals which will be needed when an entire hospital is closed. A state or community might therefore start the licensing down process by trying to close whole hospitals and service departments first. After this had succeeded or failed, it could try an "automatic" licensing down of bed capacity in the remaining hospitals until planning targets were achieved. If the state makes these intentions known in advance (for example, by setting overall objectives for the state health plan), the threat of a general automatic licensing down of all hospitals may make other providers more cooperative in trying to close or merge individual unnecessary hospitals.

### 3. Hospital Reimbursement Rate Squeeze

The purpose of tightening rates is two-fold: first, to put pressure on inefficiently utilized capacity, and second, to keep hospitals from building up surplus capital which would be used to expand capacity. In order to hold down hospital rates, hospitals must be reimbursed for the "efficient costs" of hospital care rather than full cost reimbursement. The state of the art and literature on hospital reimbursement is reviewed by Sattler (ref 68). The Social Security Administration is presently conducting experiments with different hospital reimbursement methods. Effective rate controls appear to be very demanding to operate, requiring uniform accounting and reporting procedures by hospitals and much review by regulators. The ideal rate control system is yet to be devised. A review of hospital reimbursement methods is beyond the scope of this report, however some comments can be made regarding the relationship of rate controls to excess capacity reduction:

First, the New York example (Chapter III, Section B) shows that occupancy-related reimbursement methods* can pressure hospitals to retire underutilized beds. In some cases entire hospitals can be forced to close or merge in the face of strong rate pressures. In other cases licensing down and other pressures may be necessary as a threat or a fact, in order to prevent financially unsafe hospitals from trying to hang on under strong rate controls. Compared to licensing down, which can be directed at specific hospitals, rate controls act on all hospitals, and may or may not arouse more hospital resistance. On the other hand, the hospital forced to give up capacity in the face of rate controls may be perceived by the public as inefficient, whereas licensing down may appear more arbitrary. We believe licensing down and rate controls complement each other and should be used together.

Second, if rate controls are to effectively limit capital formation, the controls must operate on all sources of hospital revenue, not just reimbursement for patient services. Indeed, if revenue from non-patient care sources can be used by hospitals to subsidize patient care reimbursement rates, the rate controls are defeated. (Since hospitals in wealthy areas generally find it easier to generate non-patient-care revenue, rate controls which do not restrict all revenue may be biased against hospitals in poverty areas.)

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* A simple example of an occupancy-adjusted reimbursement formula is as follows. Suppose a hospital has a particular charge or cost schedule, which could be based on any kind of units -- total budget, individual service, per diem, cost per admission, etc. Suppose the ideal occupancy for this hospital (or a particular service department) is "x", and suppose its actual occupancy is "y". Then all related reimbursable charges or costs are reduced by the factor $\frac{\text{"y"}}{\text{x}}$. To illustrate, suppose a hospital's per diem charge in intensive care is \$200 per day. Suppose its average occupancy is 70% whereas the ideal would be 80%. Then the per diem reimbursement is reduced to ($\frac{70\%}{80\%}$ times \$200) or \$175. A hospital facing such an occupancy-adjusted reimbursement formula will have an incentive to request a reduction in its licensed intensive care capacity, a desired result. However, it might also try to put less sick patients in intensive care to improve occupancy, or it might simply jack up its charges, both undesired results. Hence, occupancy-adjusted reimbursement formulae must be accompanied by stringent utilization controls and by rate increase controls, or the purpose will be defeated.

Rate controls can also be effectively used to restrict leasing, a source of capital formation now inadequately controlled, by recognizing leasing as capital costs rather than allowable operating costs.

Third, to be effective, rate controls must extend to all third party payments: Medicare, Medicaid, and private insurers. If rate controls are applied only by one third party, hospitals will find ways to shift costs of that third party's beneficiaries to the other third parties, or to decline serving those beneficiaries. Most of the interviewed experts felt that present Medicare and especially Medicaid rate controls have had these effects already, to the detriment of the poor, the old, and private patients. Coordinating reimbursement of all third parties presents both legal and practical problems in most states, but these problems must be overcome. New York provides one example (see Chapter III, Section B), where by law Blue Cross must use the same reimbursement principles as the state imposes on Medicaid reimbursement.

Fourth, present reimbursement controls are more easily directed at reducing under-utilized capacity than excessively-utilized capacity. In fact, as long as hospitals are paid per diem (or per admission) they have a powerful incentive to increase patient days (or admissions) when under financial pressure. (There is some preliminary evidence that length of stay in New York hospitals is being adversely affected because of this incentive effect of their tight reimbursement controls.) If the policy objective is to contain per capita hospital expenditures via reimbursement controls, eventually some form of per capita hospital budget setting system (e.g. a ceiling) may be necessary (see footnote, Chapter IV, Method 9). This reduces or reverses the incentive to inflate the use of services.

We would make one speculative suggestion to those involved in designing hospital reimbursement controls. In order that reimbursement controls bring pressure on excessively-used capacity, it may be possible to devise a formula to adjust reimbursement rates downward in an area in proportion to the amount of excess per capita use and expense in that area. (We term this regulatory concept "performance-related regulation," and it is discussed more fully in Section B.3 above.) As an overly simple example, if the planning goal for an area was 1300 patient days per 1000 persons, and actual use exceeded this amount by 10%, then reimbursement rates might be reduced 10% of what they would otherwise have been. The same adjustment might be made on inpatient physician fees. This kind of pressure might act as an incentive for physicians and hospitals to make joint review mechanisms like PSRO work, and really look over each other's shoulder for unnecessary use.

### 4. Health Insurance Regulation

There are a number of actions that private insurers could take to put direct and indirect pressure on excess hospital capacity. However, individual insurance companies are reluctant to act alone since providers can retaliate against insurers who get out of line. The ultimate retaliation is refusal to honor the insurer's policy, but short of this providers can make life difficult for the insurer's subscribers in a variety of lesser ways that might cause subscribers to think about getting another insurer. Since insurers do not want to lose subscribers to competitors, insurers tend to avoid antagonizing providers. Even where one insurer dominates a local market, fear of wider repercussions has tended to hold insurers in line. Thus insurers are inhibited because they are vulnerable to "divide and conquer" by providers. (More accurately, at least at present, they are divided and conquered. This applies to Medicare and Medicaid as well.)

Fear of antitrust allegations and other provider retaliation has kept insurers from collaborating on health care cost control measures. Insurers have thus stressed health planning and provider claims review as ways to contain cost that get insurers off the hook. Moreover, there has been little competitive advantage and potentially much disadvantage to insurers attempting any cost control measures on providers, even collectively. Only recently have group buyers been much interested in cost control. While there is general public feeling that insurers should do something, it does not translate into realizable support; individual patients resent insurer interference between themselves and their providers. Moreover, insurers tend to think of themselves as financial agents, not medical policemen. Thus insurers need something that takes them off the hook with providers and consumers, and prods them into action.

Two kinds of pressures might help insurers act more effectively, both alone and in collaboration, to cost control providers. One is pressure from private group buyers (see A.4 above). The other is regulatory pressure. In both cases the insurers can tell providers and patients "they made me do it."

The most powerful regulatory pressure would be to condition premium rate increases on insurers taking certain specific actions. One of the more publicized examples of such pressure was the action of the Pennsylvania insurance commission against the Philadelphia Blue Cross organization, in which the commission refused to permit a requested rate increase until Blue Cross inserted specific provisions in its contracts with hospitals and took certain further actions to enforce its contract provisions. (The specific provisions and actions are available from the Pennsylvania Insurance Commission.) While the merits of each of the specific provisions and actions may not be agreed on, the example indicates the power of such regulatory pressure.

There are two common difficulties in using state health insurance regulatory powers.* First, state insurance commissions deal with many types of insurance and may lack detailed expertise or adequate staff budgets in health insurance.

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* Mustering public support for stringent regulation is a third -- and more crucial -- difficulty common to all regulatory approaches.

Second, health insurance regulation is seldom coordinated with other health care regulation. The remedy for both problems may often be the same -- more coordination between health care regulators and health insurance regulators. Each state will have to look to its own situation to assure such coordination. In many states, regulators can work out cooperative administrative arrangements easily. In other states, bureaucratic jealousies or inertia will be a problem. Executive orders, shifts of personnel and authority, and/or new administrative procedures may be necessary to prod the two sets of regulators to work together.

### 5. Disclosure

Disclosure of pertinent hospital performance data can generate public support, and arm private sector leaders and buyers in negotiating with providers. Disclosure mechanisms must overcome several problems if they are to be effective. First, the pertinent data must be reported by providers. Providers will frequently claim that certain kinds of data, for example per capita use rates for various procedures (e.g. tonsillectomies per 1000 population), should not be released because they will be misinterpreted by the public. Such claims have little merit. It is better that the public have the data; then, if providers feel there has been misinterpretation, they can attempt to make their case with both sides seeing the numbers. The result will be a more educated public and more responsive providers.

Second, the disclosed data must be analyzed and translated into simple, readily understood indices. The indices must be stated in comparative form, so that hospitals and communities can be compared with each other. In this way the public will have some feel for what the numbers mean. For example, if each hospital reports its costs, patient days and bed capacity, the public will have no idea what to make of this pile of numbers. But if these numbers are translated into age-sex adjusted per capita rates for each area (as in Chapter I, Table 6, 7 and 8), the public will be able to compare and question the variations. Failure to devote adequate effort to digesting the data and presenting it in a transparent format will frustrate the effectiveness of disclosure. Federal efforts to develop model disclosure legislation, and model systems for reporting, analysis, and formats, could advance the state of the art here.

Third, the data must be disseminated. If it is only available in the bowels of some government agency upon submitting a request in triplicate, disclosure will not be effective. The pertinent, simplified performance indices must be sent to the media, to public officials, and to business and labor organizations. State and local planning agencies, insurers, and business and labor could all help in the analysis and dissemination.

### 6. Private Sector Coalitions

Beyond the points mentioned in Section A.4 above, there are a couple of essential ingredients in order that a private sector coalition be able to function well, even where top labor and management commitment is present. First, lay leaders usually feel too inexpert to challenge providers. Business and labor usually have the clout to get information from hospitals (disclosure laws will help, but are not necessary to a really determined private coalition with top-level commitment). But they do not know what to look for or even what to ask for. Reports and manuals, simplified for lay users, which make clear the basic facts and concepts of excess capacity reduction would help both buyers and providers in identifying and negotiating issues. Second, private coalitions need continued expert staffing to collect and analyze information and carry out the coalition's tasks. Most private organizations would not find it worthwhile to free up a person solely for this task. The HSA or a large insurer could be a logical source of such an expert staff person, and could help assure that follow-through occurred.

### 7. Relating Local Cost Burdens to Local Excess Hospital Capacity

The need for making the community more responsible for the costs of building and maintaining excess capacity, and several mechanisms to do this, were discussed in Section C.4 above.

CARROTS:

### 8. Grants, Buy-Out and Bed-Banking

Either public or private entities could make available grants to purchase or to assist a hospital to retire excess capacity. We shall loosely refer to purchase or paying off debt and other obligations as "buy out" of excess capacity. But grants could also be used to hire consultant help, conduct feasibility and impact studies, help employees relocate, etc.

Such grants can be used strategically, along with other carrots and sticks, to reduce excess capacity in a number of ways. For example a hospital might be willing to close, say, a poorly occupied therapeutic radiology facility if it had some way to pay off its debt on the cobalt machines and other capital equipment. An older, over-extended hospital might be willing to move into a smaller, modern facility if it had a little front-end capital. Or one hospital might be willing to talk merger (with less total capacity) with a second hospital if the second did not have so much debt. A partial or entire buy-out of such obligations might induce retirement of such capacity. Or a grant to help remodeling might induce a hospital to convert bed space to non-hospital use. These financial inducements might be particularly welcome if the affected hospital had reason to suspect other pressures -- licensing down, private sector pressure, etc. -- might be brought to bear if they refused.

A number of points should be observed in such buy-outs. First, situations vary so greatly from one hospital and community to the next that each situation should be examined on the merits. An impact study (see Chapter IV, Section C) should be made to assess (1) whether the proposed reduction represents underutilized or excessively-utilized capacity, (2) what potential savings might result (unless the net savings -- including any offset from conversion to other use -- will recover the cost of the buy-out and any other grants in three to five years, other situations may be more worthwhile), and (3) whether the proposed reduction makes sense in terms of availability of health services and other side-effects (see Chapter II, Section C).

A second point is that buy-out would seem difficult to justify unless there are reasonable assurances that other hospitals will not react by expanding their capacity. In a declining central city overstocked with older hospitals, the mere constellation of demographic and financial forces may provide sufficient assurance. But in a stable or growing community over-built with hospitals, some of the remaining hospitals may ambitiously react to the closure or reduction of one of their number by trying to expand. The impact study should find evidence of policy statements from government or private leaders, who have sufficient clout to back-up what they say, that the community intends to contain or reduce its remaining hospital capacity. Otherwise the purpose of buy-out is frustrated, and the investment is wasted. It simply bails out an over-extended hospital without necessarily reducing excess capacity.

A third point is that buy-out, in most cases, should probably be reserved for the permanent retirement of whole hospitals or service departments. In Chapter II we noted that the pay-off in closing isolated beds is much less than for closing entire hospitals; and above we noted that there are much less expensive ways to reduce idle isolated beds, such as "licensing down" or occupancy-adjusted reimbursement. The funds available for buy-out will undoubtedly be limited,* so they should be directed to the most difficult but most cost-effective targets.

Finally, grants and buy-out funds should be coordinated with other carrots and sticks in the overall strategy to reduce excess hospital capacity. It will usually be prohibitively expensive to attract capacity for retirement by financial inducements alone. Hospitals will be more willing if they see and feel the handwriting on the wall. Policy statements and proposed planning targets for communities will put the hospitals on notice of where pressure will be applied. Disclosure and capital and reimbursement controls will heighten the pressure. Buy-out propositions could then be initiated by the hospitals themselves or by public and private officials. For example, a hospital could apply to a planning agency or private sector coalition with a plan to retire excess capacity in return for a grant or buy-out funds, or two hospitals might apply for funds to assist a merger which would result in lower total capacity. On the other hand, a regulatory agency or private sector coalition might approach those hospitals which an impact study has identified as unnecessary, and suggest a merger or reduction proposition using buy-out or grant funds as an inducement.

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* The savings from capacity reduction are spread over all payers of care, and are not easily captured to repay the source of the buy-out money.

Temporary Buy-Out and Bed Banking. A "bed bank" analogous to the "soil bank" has been suggested as an inducement to temporarily retire excess capacity. This analogy will need considerable modification to be useful. In the "soil bank," farmers can decide each year whether to put acreage in the bank or to plant it. The government pays, not for the crop that was not planted, but only for the profit expected on the crop. Presumably in a "bed bank," hospitals would decide whether to operate beds or to "bank" them for a year; the "bed bank" would not pay for the operating cost of banked beds, but only for the annualized capital cost.

There are a number of difficulties with this approach. First, on a voluntary basis, hospitals are likely to bank only idle beds; they are unlikely to temporarily bank service departments or the entire hospital. Since they are carrying the capital costs of these idle beds on the remaining beds now, any income from the bed bank will represent additional income unless reimbursement on the remaining beds is cut. The amount to cut (especially next year when a rate increase is requested) is ambiguous, and demands effort and judgment; if done wrong, the "bed bank" could end up subsidizing excess capacity rather than reducing it. Second, the savings from retiring idle beds do not come from the negligible (marginal) operating cost of these beds; the savings come from the reverse Roemer effect of a tighter bed supply (see Appendix A). If hospitals have discretion to put beds back into production every year, it is doubtful that the reverse Roemer effect will operate; the bed supply is simply not tight. Third, even if the hospital is not permitted to return "banked" beds to production without approval of the bed bank, the arguments as to when to unbank beds, and assuring that "banked" beds stay out of production, will demand time, effort and judgment. The "bed bank" is thus a complicated and, possibly, a no-win game. There are simply too many communities where excess capacity needs to be permanently retired to divert much effort and scarce buy-out funds to these tricky, lower priority situations. It would be far more cost-effective if "licensing down" and occupancy-adjusted reimbursement are used to retire idle beds permanently. In a community where the population will rapidly grow into its existing bed supply, a moratorium would seem simpler and surer than a bed bank.

Nevertheless there may be some situations where the temporary retirement of a hospital building or wing may be desirable. (This should be proven by a proper impact study.) "Mothballing" a large amount of hospital space is unlikely to prove financially attractive because of maintenance costs.

A temporary proposition may become financially attractive if the space can be converted to other use for this period. Such conversion could cover maintenance costs and possibly some or all of the capital costs of the building, and it would help assure the space was not used for acute hospital care. A grant might be useful to help with remodeling costs. Physician office space, long-term or nursing home care, dormitory space, hotel space, are some examples of uses which could be phased out at some later time. The conversion should be for a sufficiently long period, and the exclusion of the space for hospital use sufficiently certain, that the bed supply is held tight during the period.

In sum, a general "bed bank" with hospitals volunteering to bank such beds as they wish in return for a capital subsidy does not appear attractive. Rather, each proposition seeking financial assistance to retire excess hospital capacity, whether permanently or temporarily, should be evaluated on the merits; grants and buy-out funds should be strategically used on those propositions which will produce the greatest net savings in per capita hospital expense.

## 9. Trading Down

In "trading down" a hospital is given something it wants in return for taking actions which will reduce excess capacity. Examples of trading down are mentioned in Strategy 3 ("Catch them when they come in") in Section A above, but trading down can be even more useful as a carrot in broader strategies where trades across several hospitals are possible. Some examples illustrate the possibilities. Three hospitals could arrange that each hospital gets to consolidate a less commonly used specialty service and the other two give it up, e.g. one hospital takes cancer care, another cardiac surgery, and a third renal dialysis. Two older hospitals might agree to merge in return for a Certificate of Need to build a modern, smaller hospital.

The "carrots" that can be offered in trades must usually be blessed by Certificate of Need approval. Thus the Certificate of Need agency must be coordinated with capacity reduction. These carrots can be generally classified as facility improvements (e.g. modernization, new equipment, etc.), program additions (e.g. a new alcoholism clinic, etc.), and "exclusive franchises" (e.g. one hospital gets to handle all the inpatient pediatric care, etc.).

Certificate of Need awards for what amounts to "exclusive franchise" will be necessary if capacity for, particularly, tertiary care services is to be effectively contained. Yet caution must be exercised, for such an "exclusive franchise" has all the danger of any monopoly. For example, suppose one hospital is awarded the only CAT scanner in town. What is to prevent it from raising its rates? How will qualified physicians not on its medical staff gain privileges to the scanner? What if an HMO physician desires privileges to the scanner? If Certificate of Need controls have created this monopoly, then the state must be prepared to answer for its behavior.

Some steps can be taken to minimize the danger of "exclusive franchises." First, if the distribution of exclusive franchises is worked out in advance between planners and local physicians and hospitals, the arrangements will probably have the greatest chance of success (see Chapter IV, Method 9). For example, if the state sets a planning target to provide cardiac surgery units at a maximum rate sufficient to handle 20 cases per 100,000 population, with no unit having less than 100 cases annually, each planning region will then know how many cardiac surgery units it can have; then planners and providers can sit down and work out where these units should be placed from a medical and availability standpoint (see e.g. ref 62). Second, where possible, "limited franchises" should be used instead of "exclusive franchises." In other words, unless the economic arguments for consolidation are overwhelming, at least two hospitals reasonably available to the community should offer a service facility rather than just one hospital. Deciding between limited and exclusive franchises will usually be a judgment call. A third remedy -- where it makes medical sense -- is to spread the exclusive franchises for the different specialty services around, so that each hospital has a little leverage on the others. Fourth, there should be some appeal mechanism, with the state retaining power to revoke the license for a specialized service facility and give it to another hospital if it receives sufficient complaints and appeals that a hospital is abusing its monopoly position.

Finally, regarding HMOs and other prepaid delivery systems seeking access to exclusive franchise service facilities, we reiterate the arguments of Chapter IV, Section E. Because well-performing prepaid delivery systems have every incentive to minimize excess capacity, we see no reason to place any capacity controls on them. Policymakers must recognize that prepaid delivery systems compete with conventional providers. Therefore hospitals may use an exclusive franchise to impede entry of prepaid delivery systems. The threat that, say, an HMO can set up its own service facility (say for cardiac surgery) if need be, is a powerful lever for the HMO to persuade a hospital with an exclusive franchise (in this instance on cardiac surgery) to negotiate a satisfactory arrangement with the HMO. Without this lever, the hospital could simply refuse to deal with the HMO, or engage in subtle sabotage tactics. Because an HMO will always prefer to buy rather than build when it makes economic sense, there is no reason to believe the HMO will abuse its exemption from capacity controls. It will build only when its access to needed services is blocked* We find little merit in counter arguments that for an HMO to build a facility already existing in the community is a waste of capital costs. Such sunk capital costs are not nearly as important as the operating costs they generate (see Chapter I, Section A), and the sunk cost argument often obfuscates monopoly behavior. The only restriction we would place on prepaid delivery systems is that they demonstrate that their per capita use is less than planning goals for the community, and that 75% of the utilization of the facility in question will be prepaid enrollees; this will prevent capacity expansion by conventional providers using a prepaid facade.

## 10. Conversion

We have mentioned conversion of hospital space to other use mainly as an economic offset to the costs of retiring excess capacity. (Such uses include health services other than acute inpatient care, social services, or even civic and commercial use having nothing to do with patient care.) However, beyond its economic value, conversion may be even more valuable as a powerful carrot to providers and the community to consider hospital capacity reduction. Conversion to desired community health services -- home health care, nursing home care, chronic care, chemical dependency services, etc. -- may be a way for hospital sponsors to retain identity and social mission. Conversion may be especially useful when community employment is an issue. Conversion to non-hospital services will permit many hospital employees to use their same skills in new ways, and many of the old suppliers -- e.g. food, linen, maintenance, etc. -- will be able to do business with the converted institution. Even if the space is converted to entirely non-patient care uses, the community still has it as a source of jobs and income, if perhaps not for all the same employees as before. Thus hospital sponsors and the community may be less resistant to reduction in hospital capacity if conversion is offered as a carrot.

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* To illustrate, a new HMO in a large midwestern city was purchasing inpatient care from existing conventional hospitals because its enrollment was not yet large enough to justify building an efficiently sized hospital (at least 120 beds) of its own. However, it found that these hospitals were duplicating laboratory tests already performed by the HMO on an ambulatory basis, were delaying giving HMO physicians hospital privileges, and were giving HMO patients and physicians low priority in carrying out medical orders. The HMO was unable to negotiate a stop to these subtle tactics. These tactics proved so expensive that the HMO finally found it more economic to build a less efficient, small hospital for its enrollment, even though it would have preferred to wait and build a larger hospital when the enrollment had grown sufficiently. If the HMO had not had this option, the conventional hospitals would have had it over a barrel. Despite the addition of the small hospital the city was better off, because HMO patients incurred less hospital expense than they would have if they had been forced to use the conventional system.

A serious problem that arises in establishing community health services of a non-hospital nature, particularly alternatives to hospital care such as home health services, is that there are few incentives for providers to use such services effectively. Thus such services are commonly found under-utilized, or they are used in addition to hospital care rather than as a substitute for it. One approach that may minimize this problem is to establish such services only when hospital capacity itself begins to be tight or shortly before it is expected to become tight. The pressure of tight hospital capacity should then lead to more effective use of the alternative services. Thus conversion to community health services should be kept in balance with hospital capacity reduction.

Special problems arise when only part of a hospital is converted to other patient care use. The principal danger is that the hospital may try to use the other service or its revenues to support its acute hospital care program. For example, if the space is converted to physician offices, the hospital may try to use this to feed its acute beds. Or, if the space is converted to nursing home care, the hospital may occasionally use the beds for acute inpatient care, thereby getting around the desired constraint on acute bed capacity. One way to solve these problems is to convert the entire institution to the other use, e.g. not to mix acute hospital and other care in the same facility. It might be a priori more economic if facilities could be used for mixed purposes, but one must be conscious of potential abuse.

A second special problem with mixed hospital and other patient care services is present reimbursement formulae. Sometimes reimbursement formulae force a hospital to charge excessive overhead to these other services, and sometimes hospitals try to do this themselves. If mixed service facilities are to be reimbursed properly, new reimbursement methods may be necessary. Wood (ref 70) has suggested one such method, but its generality has not yet been evaluated. Also, the beds used for acute hospital care should be identified separately from those for other use. There may be some advantage to having the non-acute patient services operated and sponsored by distinct organizations to minimize the possibilities of abuse mentioned above.

## 11. Technical Assistance

A capacity reduction program should be able to make certain kinds of technical assistance available to facilitate excess capacity reduction. It need not have technical consultants in-house, but it should build up a roster of qualified outside consultants. In some cases it might financially assist a hospital to purchase consultant help. The objective of technical assistance is to find and facilitate other ways to satisfy the interests of all affected parties.

We expect, for example, most hospitals will prefer merger to closure, as it allows them to preserve some institutional identify. A most important type of assistance will be locating potential merger partners and helping them work out the details. Assistance could help in applying for Certificate of Need approvals and applying for grant or buy-out funds. A second important type of assistance would be helping hospital employees find alternative employment, and helping the community attract new employers to replace a closed hospital. There may be state or federal service programs that could be brought to the community as new employers. Technical assistance might be useful in arranging conversion of closed hospital space to other uses.

Physicians will need to arrange alternative privileges. "Regional privileging" for exclusive franchise service facilities must be negotiated. While local physicians can probably work these matters out, given time, some technical assistance may prove useful.

Allowing sufficient time for excess capacity to be phased out will be an important tool. Given time, attrition will help ease employment and privileges problems. Keeping reimbursement stable during this phase-out may ease the transition, and technical assistance in negotiating with third parties may be helpful.

## E. Conclusions

1. Excess hospital capacity reduction is far more a socio-political problem than a technical problem. The technical tools need much refinement but are more than adequate to begin. But without public support it will be difficult or impossible to apply these tools no matter how sophisticated they are made. The greatest difficulty is that consumers do not feel the cost implications of excess capacity directly -- the costs are hidden in taxes and employer-paid premiums -- whereas they feel the impact of reduced hospital capacity on convenience, jobs and community status directly.

2. Direct strategies to reduce excess hospital capacity could be undertaken either by the public sector or the private sector (business and labor, or even by the providers themselves) or by both in concert. Both sectors would benefit from having the knowledge and technical methods to identify and retire excess capacity more widely accessible.

3. A great variety of carrots and sticks exist to bring varying degrees of pressure on excess hospital capacity commensurate with the degree and sources of socio-political support. The private sector can engage in coalitions to flexibly marshall its community influence and purchasing power. The government can use its regulatory power to reduce or revoke licenses; to exert capacity-related hospital reimbursement, capital, and insurance rate controls; to relate Certificate of Need awards to

capacity levels; and to require disclosure of hospital performance data. Some of this machinery is in place now but is not being used effectively. Both the public and private sector can offer grant assistance or outright purchase of unneeded capacity if the pay-off in savings justifies the cost, and can offer technical assistance in negotiating hospital mergers into smaller combined institutions and conversion of retired space to other purposes.

4. Because funds to purchase or assist reduction of excess hospital capacity will probably be limited, purchase and grant assistance should be concentrated on targets with high pay-off: the permanent retirement of whole hospitals and service departments. The complexity of temporary retirement and the ambiguity of bed-capacity itself implies that expending funds for the temporary retirement of isolated beds is a low priority of uncertain value. The use of grants and purchases should be used strategically, and each proposition should be examined on the merits.

5. A policy of excess hospital capacity reduction must be accompanied by strong controls on capital formation by hospitals. Otherwise we are fighting a fire while ignoring the continuing source of fuel.

6. A number of additional collateral strategies focused on restraining inpatient demand -- encouraging consumer cost-sharing, encouraging prepaid alternative delivery systems, restricting the physician supply in certain areas and specialties, and shifting more of the cost burden of local excess capacity back to the community -- would place additional pressure on excess capacity and be supportive of more direct strategies to reduce excess capacity.

# Chapter VI

# THE ADMINISTRATION AND FINANCING OF EXCESS HOSPITAL CAPACITY REDUCTION

This chapter addresses the questions:

- Who should run a capacity reduction program, and how?
- Who should pay for it?
- What incentives might make the program effective?

## A. Who Should Administer Excess Hospital Capacity Reduction?

Who should operate the program depends on the strategy adopted. However, some general considerations can be advanced.

If a private sector strategy is used (see Chapter V, Section A, Strategy 4), the coalition of private buyers must finally operate at the local level, where it can negotiate with providers and use its influence and purchasing power. The coalition may want to organize a special task force for this purpose, or it may choose to organize around a local business or labor association, or it might choose to work through the local government or HSA.* National organizations, such as the Chamber of Commerce, the AFL-CIO, Blue Cross and the Health Insurance Association, could greatly further the actions of local coalitions. The national bodies could espouse excess capacity reduction as an organizational goal, build general public support for the idea, and provide assistance to local coalitions in getting organized and learning the ropes. National employers and unions could provide the same sort of support. The visible support of national private organizations could be crucial in building the general public support necessary if excess capacity reduction is to happen at all.

If a more regulatory approach is used, the logical choice to oversee the program is probably the state. Only the state currently has the legal authority and most of the apparatus in place to exert and coordinate all the regulatory mechanisms necessary: licensure, Certificate of Need, hospital reimbursement controls applying to all patients, insurance rate setting, and data disclosure and collection.

The Federal government could preempt the regulatory field if it chose, but short of National Health Insurance, it is doubtful that the public or Congress would support the Federal government moving strongly into regulatory areas traditionally handled by the states (see Appendix B).

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* The local Health Systems Agency could play a very supportive role to local private sector coalitions. It could provide a meeting place, expert staff, and data for the coalition's efforts. Insurers could play the same role.

In the absence of such pre-emption, the Federal government can only regulate through its own programs, principly Medicare and Medicaid. Coordination of the program with state and private efforts could provide powerful support for excess capacity reduction. But by themselves Medicare and Medicaid controls do not cover enough of the population to act as the only lever against excess capacity, and could provoke providers to refuse Medicare and Medicaid beneficiaries (see Chapter V, Section D, 3 and 4). Thus the role of the Federal government should be to provide strong, visible support for excess hospital capacity reduction efforts. It can provide leadership, education of the public, money, research and development, technical tools and assistance, and the coordination of Federal programs with state and private efforts to reduce excess capacity. The visibility and effectiveness of Federal leadership may be crucial in building the general public support necessary if excess capacity reduction is to happen at all.

If local governments and HSAs do not have strong backing from the state or the local private sector, it is doubtful that they can significantly reduce excess hospital capacity in their community. With strong state leadership and pressure on excess capacity, local HSAs can function in a (badly needed) planning, coordination and technical assistance role to local providers attempting to meet state planning goals.

## B. Administrative Arrangements

In a private sector strategy, administrative arrangements will depend on how the coalition of private sector interests is put together. In a regulatory strategy, there are several administrative variants possible, few of which have been rigorously evaluated.

In Canada, health care planning and regulation tend to be performed together at the province level (equivalent to our states), and involve little outside consumer or provider input. Recently some provinces, apparently in an effort to improve communication and responsiveness to local concerns, have moved to set up local planning councils which have more consumer and provider representation, but authority continues to reside at the province level (ref 33). In the U.S. planning has been at the local level, with heavy consumer and provider input. The Lewin study (ref 45) finds decisions of local planning agencies to be provider dominated, even when consumers are a majority of the board. A number of experts we interviewed cited examples in which consumers on local planning agencies had consistently ignored cost implications and approved ever expanding services. (As we noted in Chapter V, Section C.4, communities feel the cost burden of such decisions only very indirectly.)

We would advance the following speculative suggestions:

-- As a principle, final approval of planning decisions should rest on those most closely responsible for bearing the cost implications. If one is not responsible for the costs of what is decided, one will always vote for more. (Indeed the effect of insurance on divorcing costs from use decisions is the fundamental cause of health care cost escalation.) To increase responsiveness, it would be preferable to decentralize this authority to the local level, but only if significant direct cost responsibility can be similarly decentralized.

- As a principle, given our current state of knowledge, regulatory planning decisions should be made first for the widest population base possible; then further decisions for successively smaller populations -- e.g. areas, communities, particular hospitals -- should be made successively in consonance with the larger decisions. This is opposed to the present tendency to make decisions about individual hospitals and communities, and then to aggregate these small decisions into the plans for the state. The reason for this principle is that we know much more about the macro-level then the micro-level. We know, for example, what is a safe level of coronary care beds for 100,000 persons, but we do not know how many should be in any particular hospital.

Regarding the first principle, no single government level bears the full financial consequences of its planning decisions (we suggest that this be changed if the nation adopts a public utility approach; see Section V.C.4). But through Medicaid, the state bears a far more direct burden than most local areas. Regarding the second principle, the state certainly deals with larger populations than do local areas. These principles suggest that the state should establish state planning targets for hospital capacity, and should have final authority over all local planning decisions to assure they are in consonance with state goals. We suggest the state set tentative planning targets for each local planning area. The HSAs could then assist local providers and communities in negotiating plans to meet these tentative planning targets. The local HSA and providers could appeal to the state for changes in the goals or in the time frame. The state planning agency could alter the local goals if justified, but would then have to make compensating changes in other planning areas.*

The state should begin to apply regulatory pressures in those areas falling behind their local planning goals (rather than, as now, applying regulatory pressure across the board). If strategy 2 of Chapter V were used, the HSAs would be logical candidates for the assistive program to help hospitals deal with the regulatory pressures by reducing capacity. They could help hospitals apply to sources of grant and buy-out monies for retirement of excess capacity.

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* For example, the state might set as one planning target a goal of 10.5 hospital employees per 1000 persons for the state by 1980. It might set a tentative local goal of no more than 11.0 hospital employees per 1000 persons in a particularly populous urban area of the state. The area HSA might show that out-of-area referrals for specialized services justified a higher ratio. If the state agreed, it would correspondingly reduce the target ratios in other communities such that the overall state goal of 10.5 employees per 1000 population was preserved. Whatever the final local goal approved by the state, the local HSA would then try to assist local hospitals to meet the goal.

The state would have to devise administrative arrangements to coordinate the various state regulatory authorities, including licensure, Certificate of Need, provider reimbursement controls, health insurance regulation, and disclosure and data collection. This regulation would now have a visible objective; conformity to specified planning goals in each area. As much as politically feasible, pressures would be increased selectively in areas falling behind, while areas meeting their goals would be left alone.

The state would have to maintain strong competencies at the state level in negotiation skills, technical planning skills, economic and financial analytic skills, and legal skills. The state might temporarily lend some of the more specialized staff to local HSAs wanting to perform capacity reduction impact studies or other special studies. The HSAs would need to maintain at least as strong competencies in negotiation skills as in technical planning skills.

## C. Financing Excess Hospital Capacity Reduction

Ideally, the costs of reducing excess hospital capacity should be borne proportionately by those who benefit. The benefit of reduced capacity is savings in per capita hospital expense. But the savings will show up as reduced hospital expenditures by third party payers and patients, not as direct dollars that can be recovered to finance capacity reduction.

The costs of excess capacity reduction, aside from grants and funds for buy-out, go mainly for personnel. In a private sector strategy these are the representatives of business and labor who organize the coalition and negotiate with providers; the time cost of such personnel is real but scarcely prohibitive, and should be offset by the savings to business and labor in reduced (or contained) third party premiums. In a regulatory strategy these are planning and regulatory personnel who can be covered from appropriate state and federal budgets. The taxes that support planning and regulatory budgets are not necessarily borne just by those who benefit. On can either argue that all society benefits and leave the tax structure alone or, perhaps more equitably, one could specifically tax all third parties -- private and public, profit and nonprofit -- to support the planning and regulatory budget.*

Grants and buy-out funds require moderate to large amounts of immediate front-end money. When possible, these costs may be recovered in whole or in part by conversion of retired hospital space to other use. Ideally, the balance might be borne proportionately by those who benefit. (The present distribution of hospital expenses among third party payers in the hospital space to be retired can readily be determined.) Several arrangements for raising this balance are possible.

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* We would exempt well-performing prepaid delivery systems. We see little fairness to tax them for the cost of an external regulatory mechanism which they already accomplish internally on their own without expense to the taxpayer. They should not have to pay for the sins of others, and they should be allowed to use their cost advantage as an incentive.

One arrangement possible in a private sector coalition would be for those employers who expect to benefit to put up the funds. Alternatively they could persuade their insurance carriers to put up the funds, to be repaid from premiums. Since Medicare and Medicaid will usually benefit also, these public programs should also contribute their fair share in buy-out and grant propositions.

In a regulatory approach the state, after approving a buy-out or grant proposition to retire capacity, could simply make a one-time assessment of all third parties -- including Medicare -- proportionate to their expenditures in the hospital space to be retired. (A private coalition which did not include all relevant third parties might request the state to levy such an assessment.) Alternatively the state could simply appropriate tax funds for this purpose.

The above arrangements may prove too complex for initial demonstration experiments exploring ways to reduce excess hospital capacity. The federal or state government, or private organizations or foundations, may wish to make grant money available to initiate excess capacity reduction demonstrations. (The Talmadge amendments to Medicare and Medicaid propose that Medicare trust funds be made available for retiring excess hospital capacity.)

## D. Incentives on Regulators of Hospital Capacity

Planning and regulation are generally enacted to correct recognized defects in market structure and incentives. Unfortunately, planning and regulation are themselves frequently regarded rather uncritically as a "deus ex machina" which will operate with sublime objectivity solely in the public interest. Research on regulation (ref 39) does not bear out this faith. Like any other organization, planning and regulatory agencies behave the way they are structured and rewarded to behave. All too often this has led to undue influence or protection of the regulated industry. In setting up planning and regulatory mechanisms, care must be taken to avoid planning and regulatory defects as serious as the market defects they were supposed to correct.

Little is known about how to make health care regulatory agencies more effective. The following suggestions are speculative:

Feedback on Measurable Objectives. If key population-based rates for hospital capacity, use and expenditures in each planning area are compiled and publicized in a simple comparative format by states and the federal government, HSA planners as well as state and federal policymakers will be able to compare the performance of each HSA against the others. This will not only provide a comparative yardstick for planners to measure their own performance, but create public pressure on the high cost areas.

Performance-related Regulation. Regulation presently tends to be applied across-the-board. Thought should be given to varying the amount of regulatory pressure and effort applied in different planning areas according to how well that area is achieving specified planning targets. In anticipation that a public utility approach to health care will eventually require a ceiling on expenditures, the most important planning target would be per capita hospital expenditures in each HSA area. If per capita hospital expenditures rose faster than a targeted amount, regulatory pressures -- such as licensing down, Certificate of Need awards, reimbursement controls, etc. (see Chapter V.D) -- would be made more stringent in that area. The HSA area would in effect be operating under a "quasi-lid." This would act as an incentive on both providers and regulators to stay within the ceiling. (See Chapter V, Section B.3 for a more complete discussion of performance-related regulation.)

Independent vs. Non-independent Regulatory Agencies. There is some argument that independent regulatory commissions, in which commissioners are appointed for fixed tenures, are less subject to political pressures from vested interests than are regulatory agencies whose heads serve at the pleasure of the governor. We are not aware of conclusive evidence either way. We would make three theoretical observations. First, independent regulatory bodies will be harder to coordinate. Second, we suspect that elected officials will come under increasingly greater pressure to contain health care costs, so that insulating regulation from the governor may be a disadvantage. Third, if the nation does move to a public utility approach with a "lid," it is possible but unlikely that the nation will be satisfied to run a $100 billion budget through an independent tenured commission rather than elected officials. We would suggest that if independent regulatory and planning bodies are used, the fixed tenure of the members be subject to the achievement of planning targets. In other words, state and local independent regulatory and planning agency boards could not be removed except for just cause, one of which would be failure to meet planning goals. Overall planning goals might be specified by the governor, or by the governor with the approval of the legislature.

Relating Cost Responsibility to Decision-making Responsibility. All of the above incentives are in part attempts to move the cost burden more toward those who make the decisions. Other incentives in this vein may be possible (see Chapter V, Section C.4). Because business and labor, much more than individual consumers, face the cost of planning decisions, their representation on planning and regulatory boards could be a strong incentive and counterweight to the interests of providers and individual communities (see Chapter IV, Method 9).

## E. Conclusions

1. A private sector approach to excess capacity reduction would best operate at the local level, with national business and labor organizations playing a strong supportive role.

2. A regulatory approach would best be directed at the state level, at least until national health insurance might give the federal government a reason to pre-empt the field.

3. The federal government can play a strong supportive role to any of these approaches, providing leadership, visibility, encouragement, and technical and financial assistance.

4. In designing regulatory systems to reduce excess hospital capacity, attention must be given to designing the structure and incentives on regulators to avoid regulatory defects as serious as the market defects they were supposed to correct.

# Chapter VII

# NEXT STEPS: CONCLUSIONS AND RECOMMENDATIONS

This chapter sets forth a series of recommendations that might help reduce excess hospital capacity. First, general goals and policies are suggested; then specific, measurable objectives; then policies to achieve these goals and objectives; and finally more specific actions to carry out each of these policies. Recommended actions are specifically addressed to the federal government, to states, to the private sector, and to health systems agencies. To motivate these recommendations, we begin by summarizing our major conclusions, found at the end of each chapter.

## A. Summary of Major Findings and Conclusions

1. The United States has substantial excess acute hospital capacity, both under-utilized and excessively-utilized, which could be reduced without threat to health. The accumulated results of fifteen years of health services research (see Chapter I) suggest that, if done in an orderly and appropriate manner, the United States could reduce its hospital capacity, conservatively, by 20% or more without harm to health. On the order of 5% to 10% of hospital capacity could be reduced just by retiring excess under-utilized capacity. An additional 10% or more of hospital capacity could be reduced by retiring excessively-utilized capacity, especially in areas of high use and capacity. Since the present average level of hospital use (1200 patient days per 1000 population) is so far above the minimum expected to effect health (uncertain, but on the order of 600 to 800 patient days or less per 1000 population for a reasonably well-organized health care system), reduction in areas of above average hospital use and capacity, if accomplished in a gradual and orderly manner, should not pose any threat to health levels. Because of the so-called "reverse Roemer effect," excess capacity reduction should itself reduce excessive levels of hospital use. This capacity excess (from a health standpoint) extends not only to the number of hospital beds, but to the (labor and capital) intensity of beds. While studies are not as complete as could be desired, the evidence suggest that high intensity service facilities, such as coronary care units and cardiac surgery units, are substantially under-utilized and unnecessarily utilized in areas of high capacity. The difference between high and low hospital use rates does not represent any conspiracy of providers to over provide the American people with hospital services. Rather, it primarily represents differences in medical practice styles, some emphasizing liberal use of the hospital and others more conservative use. Both styles appear capable of producing equally good health results. Therefore by the term "excessively-utilized" capacity, we do not imply bad medical care; we simply mean equally good patient outcomes could be achieved by less costly alternative styles of practice. It is not bad medical care to admit patients for diagnostic tests and treatment that could be performed on an ambulatory or home care basis, and it

may be far more comfortable and convenient for both patient and provider; certainly the present system rewards such behavior. It is simply that such hospital care has nothing to do with health and is unnecessarily expensive. Whether more moderate styles of hospital use are too utilitarian for the tastes of Americans and their providers remains an open question.

2. The savings produced by reducing excess hospital capacity could be substantial, but depend crucially upon how it is done: retiring entire hospitals produces substantially more savings than an equivalent reduction closing portions of several hospitals. A 10% reduction in hospital capacity, if accomplished by retiring entire hospitals, could produce continuing savings of up to 8% or so in annual hospital expenditures (see Chapter II,A). In 1975, an 8% reduction in annual hospital expenditures nationally would have amounted to $3 billion). The resulting savings would repay the "sunk capital cost" of the retired hospitals within two to four years. In contrast, a 10% capacity reduction achieved by taking across-the-board general cuts at each hospital would produce savings of only 1% or so in annual hospital expenditures; such across-the-board cuts neither constrain use well (beds are easily set-up and taken down) nor produce more efficient use of other hospitals. A 10% capacity reduction achieved by consolidating and eliminating duplicative, under-utilized service departments among hospitals would produce savings of 4% or so, intermediate between retiring entire hospitals and general reductions at each hospital. A moratorium on net increases in hospital capacity in areas of growing population would eventually produce savings equivalent to retiring whole hospitals. In any of these approaches, additional savings would result from reduction in inpatient physician expenditures but these would be offset at least in part by increases in ambulatory care expenditures. A 20% reduction in hospital capacity would at least double these estimated savings. The savings from capacity reduction would gradually erode unless the remaining hospitals were constrained from excessively increasing the amount and intensity of their capacity.

3. Effective hospital capacity reduction would likely restrain excessive hospital use and expenditures, but if equal attention is not given to restraining hospital demand, patient queuing and the necessity for increased public-utility types of controls may be significant side effects. The "reverse Roemer effect" suggests that tightening hospital supply lowers hospital use, as less severe cases are treated outside the hospital. This plus the more efficient use of remaining hospital capacity leads to reduced hospital expenditures. On the other hand, if excessive demand for hospital care remains high while supply is reduced, increased public utility controls will be necessary to restrain remaining hospitals from increasing the amount and intensity of their capacity and/or from engaging in semi-monopolistic pricing, physician selection, and patient selection practices. Patient queues (i.e. waiting for non-urgent admissions) may also occur, particularly in areas where hospital-oriented specialists are excessively concentrated.

While not a threat to health if admissions are properly prioritized, patient queuing could cause troublesome political reaction. Both side-effects would be much diminished by successful demand reduction. Since physicians create the demand for hospital care at least as much as do patients, successful measures to reduce hospital demand will have to be aimed at both physicians and consumers.

4. Policies to reduce excess hospital supply and demand can be classified in light of consistent overall strategies to contain health care costs. Excessive health care cost escalation occurs because of the growth of comprehensive third-party health insurance (both public and private) over the last thirty years which, by its nature, erodes market discipline from a medical care system with powerful incentives to escalate costs (see Chapter III.A). To achieve effective cost control, the nation must either restructure the medical care delivery system and its financing to establish market discipline, or establish extremely strong government controls as a substitute discipline, or use some combination of both. Research and experience suggest three major alternative strategies that offer sufficient cost discipline to contain costs (see Chapter II.B). The first two are market-oriented, and would minimize the necessity for government intervention; the third strategy emphasizes strong government controls. Although many variants exist within each major approach, at the more general level one or some consistent combination of these three approaches appear to exhaust the major choices that might work:

-- Consumer cost-sharing approach emphasizing insurance with strong income-related "front-end" deductibles and coinsurance,* to reward consumers who use medical care economically and seek out efficient providers.

-- Provider incentives approach, emphasizing prepaid and other alternative delivery systems with strong built-in incentives for providers to be efficient as well as effective.

-- Government "lid" approach, emphasizing strong public utility-like controls (e.g. over entry, price and performance) that place a budgetary ceiling on health care expenditures.

Presently the nation appears to be pursuing a fourth approach unlikely to work well.

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* By "front-end" cost sharing is meant deductibles and coinsurance on the first several hundred dollars of benefits paid, with the consumer's total cost share not to exceed some specified maximum, above which he is 100% covered. By income-related is meant the consumer's maximum cost-share is decreased according to his ability to pay.

-- Piecemeal public utility regulation, emphasizing regulation of the cost and necessity of individual medical transactions. In the absence of a budgetary ceiling, medical cost and use can be legitimately expanded indefinitely; hence this unwieldy approach has not worked well and seems unlikely to do so, even if made quite strong.

The two consumer market-oriented approaches above would tend to reduce excess hospital capacity by discouraging excessive consumer- and provider-induced demand for hospital care, so that excess capacity could not be supported. The government "lid" approach would reduce excess capacity both directly, by curtailing excess supply and the operating and capital budgets that support it, and indirectly, by restricting the amount and budget of hospital-oriented physician specialists generating hospital demand.

5. The principal problem of health care cost containment policy is no longer chiefly technical; it is more a problem of public understanding and support. This conclusion is not meant to minimize the thorny technical issues remaining, so much as to emphasize the priority and difficulty of building public support. The technical tools to identify and retire excess hospital capacity are crude but adequate enough to begin with; the chief barrier is that there is no climate of public support to reduce the number of community hospitals and service facilities to more moderate levels. More generally, the overall technical outlines of the three strategies likely to contain health care costs are reasonably clear. Individually or in combination, these three approaches offer genuine choices, each representing different values, advantages and implications for the future health care system. But all of these choices are painful and would gore a number of cherished oxen. There is presently neither understanding nor support from the public or providers for any of them. The public and providers are not only unaware that they have real choices, they are unaware that they even have to make a choice. In the absence of effective cost discipline, health care costs will simply rise at their present rate until the nation makes a choice, either deliberately or by backing into it blindly.

## B. General Goals and Policies for Reducing Excess Hospital Capacity

The following goals and policies could be advocated by both government and the private sector:

1. We recommend: The nation should adopt an initial policy goal to reduce hospital capacity by 10% (on a per capita basis) over the next five years, with emphasis on retiring whole hospitals in areas of low occupancy and/or high use and capacity. It should adopt a long-term goal to reduce hospital capacity an additional 10% (on a per capita basis) over an unspecified period of years. Given the conclusions above (see A.1), the initial goal of 10% appears quite conservative, although the time

frame may be optimistic. Much of this initial reduction could likely occur by a moratorium on net capacity increases in areas of population growth, and where direct reduction is necessary, it could likely occur by replacing older under-utilized hospitals with smaller, merged institutions. The long-term goal would begin to constrain the hospital supply much more effectively. To avoid disruptive effects, the situation should be assessed after five years to determine how rapidly this further reduction should be staged. In the meantime, the long-term goal can be used to discourage areas of moderate hospital capacity from increasing their capacity.

2. We recommend: The above goals should be carried out by a balanced combination of measures to reduce both excess hospital supply and demand, in such a way as to incrementally advance all three general cost containment strategies -- consumer cost sharing, provider incentives, and a government "lid" -- likely to work. The direct reduction of hospital capacity should be viewed as one tool -- albeit an important, potentially powerful one -- to contain health care costs. Used alone, it will produce politically troublesome patient queuing in areas of high demand, and will push the nation toward a public utility approach to its health care system. In the absence of general consensus, it would seem wise for the nation to incrementally pursue all three major cost containment strategies. This would permit us to gain experience with each approach, to learn how and if these approaches can be consistently combined, and to build informed public debate. A balanced approach to reduce hospital supply and demand is not only a significant cost containment step in itself, it offers opportunities which could advance all three major cost containment approaches.

-- Hospital capacity and demand reduction addresses the largest and most inflationary sector of health care, where market discipline is most badly eroded. From the standpoint of potentially realizable savings without detrimental effect to health, hospital care is the number one priority.

-- Excess hospital capacity appears to be a readily understandable concept, communicable to the public. Debate on capacity reduction can begin to force the larger social issue: how much is enough. Physicians and hospitals are presently responding to open-ended incentives to provide a lavish standard of hospital care for which society presently rewards them. If society desires cost containment, then it must decide, in light of the relationship between hospital care and health, how much hospital expenditures, use and capacity are enough, and move to alter the structure and incentives in the health care system so that providers stay within these limits.

-- Direct reduction of hospital capacity does not conflict with the consumer cost-sharing approach. There is some conflict with encouraging alternative delivery systems (see Chapter II.B and V.B), but with care and proper design this conflict can be minimized. If reducing excess hospital supply raises equal concern for reducing excessive hospital demand, then both consumer cost-sharing and alternative delivery systems may gain a much needed boost in public attention.

-- A regulatory strategy to reduce excess hospital capacity provides a focus to draw present regulation away from the medical and financial details of myriad medical transactions -- details which government is ill-equipped to handle and would better leave to providers -- toward larger, more potentially controllable* constraints that govern system behavior and that lead toward an eventual government "lid" approach.

## C. Specific Objectives for Reducing Excess Hospital Capacity, Use and Expenditures

The reduction of excess hospital capacity is not an end in itself. Its purpose is to contain excessive hospital expenditures, both by reducing excessive hospital use and by making more efficient use of remaining capacity. In carrying out the national goal to reduce excess hospital capacity (see B.1 above), it would therefore be valuable to have specific, measurable objectives for hospital capacity, use and expenditures at the state and local planning area level to assess where and how well the purposes of capacity reduction are being achieved. Such objectives would also help in assessing the success of measures to reduce excess hospital demand.

Many experts express reluctance to set measurable objectives for local medical care capacity, use and expenditures, particularly if such objectives are externally developed. They point out that there is great variation among patients and communities, that there is no professional consensus on objectives, and that there should be flexibility for local innovation. There is also a democratic value that communities should be free to determine such objectives for themselves. We recognize all these points, but we remain persuaded for several reasons to recommend measurable local objectives. The approach we suggest attempts to accommodate the above objections.

First, communities should certainly have a voice in setting local objectives for hospital care; but they should not have the only voice, because they are only partially paying for it. Through Medicare and Medicaid and national private insurance accounts, employers, unions, states and the federal government all have a large stake in local hospital care. The substantial evidence of Chapter I suggests that local variations in hospital use are far more determined by provider capacity and interest than by population differences. In areas where providers choose to concentrate, they can legitimately raise standards of practice to justify indefinitely higher and more intensive levels of hospital use and capacity, even though the evidence shows such increases have negligible impact on community health levels.* Thus, left to themselves, communities have and will continue to develop gross inequities in levels of hospital care. National payers of care may prefer to continue subsidizing excessive hospital expense in communities with no demonstrably higher need, but there seems no question of their legitimate right to have a voice in altering this situation should they choose.

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* We do not imply that a "lid" approach will be simple to implement or operate. On the contrary, it will be long and difficult. We simply imply that if a regulatory approach is preferred, it is unlikely to work without a "lid" on expenditures and resource inputs.

Second, health care cost containment is a relatively new priority for society, and the private sector should be given maximum opportunity to reduce excess hospital use and capacity before society steps in with stringent regulation. But providers cannot act to meet society's new expectations unless society informs them through explicit goals what it expects. It is not only ineffective but unfair to charge providers with vague accusations of inefficiency and excess for what is really a social decision, or to expect providers to alter their behavior unless they know what that social decision is. Similarly, lay community and private leaders need explicit goals upon which they can act to contain capacity and costs. They must be armed with defensible objectives and adequate facts if they are to negotiate with providers on equal terms. Presently society is sending providers and communities mixed signals, on the one hand calling for cost containment, on the other rewarding them for present inequitable and luxurious levels of hospital care. Setting more specific objectives will compel society to address more explicitly the social issue of how much is enough, and thereby give the private sector a chance to respond.

Third, if society eventually decides to emphasize a regulatory approach to cost containment, in effect converting the health care system into a public utility,** it should move toward a "lid" approach, the regulatory strategy most likely to work well. A budgetary ceiling is no more than an explicit goal on how much medical care society believes is enough. Setting explicit objectives for capacity, use and expenditures is the best way to begin reorienting present ineffective regulation toward a "lid."

The approach we recommend for setting measurable state and local objectives attempts to allow flexibility for local population differences, custom and innovation, and to accommodate professional uncertainty about standards. It does not fix precise per capita rates for local hospital capacity, use and expenditures. Rather, after adjustment for local area demographics (age, sex and other risk factors) and out-of-area use, it specifies a broad range for these rates in each planning area. It specifies this range by setting "target ceilings," e.g. a desired maximum which local rates should not exceed for purposes of cost containment and equity, and "target floors" below which rates should not fall for purposes of quality and equity.* As long as rates stay within this range, the community's performance is deemed acceptable. The target ceilings are chosen quite conservatively, such that maximum allowed rates are far above the minimum below which health might be affected. Thus everything that hospital care can do for health can be achieved at levels below the target ceilings. Except for certain exceptionally costly, high intensity services, such target ceilings on per capita hospital capacity, use and expenditure rates should not be overly detailed as to type of service. This leaves flexibility for local communities and providers to work out the detailed priorities they desire within the target ceilings. Only in planning areas where performance consistently fails to come within these general target ceilings may more detailed ceilings be called for.

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* Provider-determined standards also occasionally ignore professionally less fashionable services that could have a greater impact on health; for example, the current high interest of professionals in fetal monitoring when simple early pregnancy care is only indifferently pursued.

** Our personal preference would be to emphasize consumer market approaches first, much more strongly encouraging private restructuring than policy appears to be doing at present. If such approaches are unsatisfactory, we can always resort to the public utility approach, but the reverse is not true.

The actual levels chosen for target ceilings, since they are well above the minimum expected to affect health levels, are really a matter of policy not health. The levels suggested below are meant as a starting point for policy discussion, and illustrate the recommended approach. They may be modified up or down.

We recommend: the national goal for hospital capacity reduction be achieved by moving toward the following initial objectives:

- A target floor on average occupancy of 80% (and associated target floors on minimum patient volume for selected high intensity services) in all planning areas where population density is not so sparse as to preclude it, and improved occupancy where possible in sparsely populated areas. As a long-term objective this target floor could be raised toward 85%.

This target floor in effect places a ceiling on under-utilized hospital capacity; to some extent it will also affect excessively-utilized capacity through the reverse Roemer effect.** By average occupancy is meant occupancy averaged across all hospitals in the planning area; larger hospitals may run higher, smaller hospitals lower. The suggested floor of 80% is well below the Hill-Burton target of 85%, and with allowance for areas of sparse population where small hospitals may be appropriate, therefore seems quite conservative.

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* This report is focused on cost containment and will suggest specific target ceilings for that purpose. Suggested floors specifying minimum equity and adequacy should also be developed, but are beyond the scope of this report. The specification of such floors is urgent in only a few areas, since most areas are running well above minimums expected to affect health. The problem is more one of equity than adequacy.

** Ideally it is not necessarily hospitals with low occupancy, but rather hospitals with excessive use, no matter what their occupancy, that should be retired, thereby raising occupancy to more efficient levels at remaining hospitals.

- An initial target ceiling on hospital capacity of 4.0 beds per 1000 population (and associated target ceilings on hospital labor, on capital assets, and on selected high intensity service capacity, per 1000 population) in all planning areas, with appropriate adjustment for area demographics and out-of-area use. As a long-term objective this ceiling could be lowered to 3.6 beds (and associated capacity) or less per 1000 population.

This target ceiling is aimed at both under-utilized and excessively-utilized capacity in areas of high use and capacity. At 85% occupancy, this ceiling permits a hospital use rate of 1200 patient days per 1000 population (the suggested long-term ceiling would allow 1100 patient days), well above the minimum 600 to 800 patient days per 1000 population below which health levels might be affected. This target ceiling on capacity would need to be adjusted for the population characteristics of each planning area, using standard actuarial factors, as well as for in-area use by out-of-area residents and out-of-area use by in-area residents. Adjustments would also be required in planning areas experiencing large seasonal swings in population, such as vacation and some agricultural areas. Presently we are unable to suggest specific ceilings on per capita hospital labor, assets, and selected high intensity service capacity. Planning standards are under development by HEW's Bureau of Health Planning and Resources Development, and we recommend that these include suggested population-based target ceilings for such rates. As a temporary recommendation until such development is complete, we suggest that in planning areas where target ceilings on bed rates are exceeded, there be no increase in hospital employees per 1000 population and that capital investment for replacement or new service facilities be conditioned on equivalent reductions in other capacity so as not to exceed the target ceilings on hospital use and expenditures suggested later below.

- A moratorium on net increases in hospital bed rates per 1000 population in planning areas with 3 to 4 beds per 1000 persons (with adjustment for area demographics and out-of-area use) and moderate increases in intensity (e.g. service facilities, labor and capital) consistent with the planning targets on expenditures and use suggested below.

This moratorium is suggested so that such planning areas do not increase their hospital capacity only to have to eventually reduce it when long-range objectives are adopted. A rate of 3 beds per 1000 population permits a use rate of 900 patient days per 1000 population at 85% occupancy, which is safely above the minimum below which health might be affected. The bed rate moratorium applies to net increases; these planning areas could replace or relocate hospitals or shift beds among service departments and still observe the moratorium.

To assess the success of hospital capacity reduction (and of demand reduction measures) and to suggest where additional reduction might be appropriate, we suggest the following objectives for hospital use and expenditures:

- An initial target ceiling on hospital use of 1200 patient days per 1000 population in all planning areas, adjusted for area demographics and out-of-area use. As a long-term objective this ceiling should be lowered to 1100 patient days or less per 1000 population.

- An initial target ceiling of 10% for annual increases in per capita hospital expenditures in planning areas in excess of the target ceilings on use and capacity. As a long-term objective this ceiling might eventually be lowered to 5%, and the 10% ceiling extended to all planning areas except those that appear to be underserved, so as to begin equalizing per capita hospital expenditures across planning areas while lowering the overall rate of growth.

The target ceilings suggested for hospital use are both consistent with the suggested target ceilings on capacity, if occupancy reaches 85%. The suggested target ceiling of 10% on the annual increase in per capita hospital expenditures recognizes that present levels of per capita expenditures cannot be abruptly altered without disruption of hospitals. Bringing annual increases down to 10% over five years seems gradual enough to avoid such disruption. A 10% annual increase still exceeds the expected growth rate of the rest of the economy. If it is desired to tie hospital expenditures more closely to the economy, this target ceiling can be lowered further, and it can be lowered differentially, so that areas of high expenditures are brought gradually into line with other areas.

The above objectives could be adopted by both government and private groups in efforts to reduce excess hospital capacity, use and expenditures. Of course, individual states and communities may wish to achieve lower rates of hospital capacity and use than the above target ceilings, and this appears both safe and desirable from a health and cost containment standpoint.

## D. Recommended Policy Actions to Reduce Excess Hospital Supply and Demand

This section sets out a series of recommended policies which the public and private sector could pursue to achieve the goals and objectives above.

### 1. Policy actions to reduce excess hospital supply

The following policies are recommended to directly reduce excess hospital capacity. More specific steps by which government and the private sector can forward these policies are detailed in the concluding sections of this chapter.

-- Build a climate of public support. There is currently little public understanding or support for reducing excess hospital capacity. No strategy, no matter how technically sound, will succeed without reasonable public support. Even England and Canada, with virtually complete authority over their hospitals, have had limited success in reducing excess capacity due to public and provider reaction (see Chapter III.B). Government, business, labor, insurers, providers and the media should be encouraged to make vigorous efforts -- budgeting manpower, time and money -- to inform key leaders, vital interest groups and the general public of the magnitude of excess hospital use and capacity and the need for reduction. Part of these educational efforts should be broadened to include information on the causes of health care cost escalation generally (see Chapter III.A) and the major options available to contain it. All cost containment efforts, hospital capacity reduction included, would benefit if certain traditional myths were laid to rest, and the public took a more hard-nosed approach to medical care. (In many respects the medical care system now enjoys the same unquestioning response that the public once gave the Defense Department before a healthy skepticism developed about defense.) The myth that "more medical care will make us healthier," the myth that in medical care "everything for everybody everywhere at the lowest sound cost" is either desirable or affordable, the myth that "health care costs will be contained just by eliminating fraud and abuse" . . . all these myths need deflating. The hard truth is that we already know how to practice styles of medicine which, if extended equally to all, would cost far more than the nation would or should pay and more than the returns to health would justify. If the nation should overspend for medical care the health and well-being of Americans would actually be reduced. If we desire adequate health care for all at a price the nation is willing to pay, we shall have to restore discipline to the health care system that discourages cost-ineffective "high style" practice and emphasizes equally effective, lower cost styles. We must encourage a new philosophy of medical care: that which is most effective for those who will most benefit within the means society will make available. This will involve hard trade-offs. It will require change in the attitudes and expectations of both providers and consumers.

-- Involve the private sector -- business, labor, insurers, and providers -- as well as the public sector in efforts to reduce excess hospital capacity. Both the private and public sector can and should participate in reducing excess hospital capacity. At least three approaches are possible (see Chapter V.A):

- Private sector approach. Business, labor, and insurers organize coalitions or task forces to use their community influence and collective purchasing power to negotiate reduction in excess hospital capacity with providers.

- Public sector approach. Government uses its regulatory powers over licensure and reimbursement to reduce excess capacity, and maintains the reduction by expanded Certificate of Need and other capital controls.

- Mixed public-private approach. Government acts as a mediator in formal bargaining sessions between the buyers (business, labor, third parties) and providers. Government sets overall planning guidelines for the bargaining and enforces the decisions made.

The private sector can move much more rapidly and flexibly than can government. Existing regulatory authority (residing mainly at the state level) is largely inadequate to effectively reduce excess capacity; both time and public support will be required to strengthen it. Private sector action thus provides a way to initiate efforts immediately, and may avoid the necessity for overly-stringent regulation. Even if a private approach does not succeed, the effort will educate the private sector and build support for such regulatory controls as may eventually be required.

-- Conduct demonstration projects. The federal government, states, foundations, insurers and private group buyer coalitions should make available technical assistance and financial support to conduct demonstration projects in communities wishing to attempt reduction in excess hospital capacity. Careful monitoring and evaluation would permit these demonstrations to serve as models for later, more systematic efforts to reduce excess capacity. Legislation to appropriate funds for demonstration projects would provide opportunity for public hearings and enunciation of goals regarding excess hospital capacity.

-- Coordinate health care delivery, financing and regulatory programs with private and public efforts to reduce excess hospital capacity. Federal, state and local public short-term hospitals should be included in private and public planning and/or regulatory efforts to reduce excess hospital capacity. Federal, state and private health insurance programs should actively seek out and cooperate with private and public efforts to reduce excess hospital capacity; in particular, they should coordinate their reimbursement practices with any reimbursement controls on excess capacity, and make funds available to assist reduction. Public and private loans and guarantees to hospitals should be sharply curtailed in areas of excess capacity. States should strengthen and coordinate their regulation of licensure, provider reimbursement, health insurance rates, public disclosure of hospital data, and Certificate of Need to bring pressure on excess capacity.

-- Shift from demand-based to population-based planning. Current planning methods project future hospital capacity requirements from trends in present hospital use. The well-established research result that hospital capacity begets hospital use shows such "demand-based" methods to be self-fulfilling and inflationary. Planning should emphasize "population-based" methods, which establish a range of hospital use and capacity levels for various services adequate to care for a population of specified demographic characteristics, and then hold each planning area within those standards (making allowance for out-of-area use). Planners should be trained in these methods. Population-based planning methods are crude but adequate enough to begin with. Research and development should be initiated to refine the methods, and data systems should be put in place to monitor per capita hospital expenditure, use and capacity rates in each planning area. These data systems will show which planning areas are within the target ceilings and whether the planning is effectively containing costs.

-- Shift toward performance-related regulation, based on a "lid." Present fragmented cost control regulation tends to fall equally on efficient and inefficient providers; its objectives, and therefore its effectiveness, are difficult to measure; and it appears unlikely to work well. If regulatory pressures are strengthened, they should be coordinated and move toward a measurable budgetary "lid," the regulatory approach most likely to work well. The regulation should be related to performance, rewarding efficient providers and penalizing inefficient providers. Regulation could be performance-related by keying regulatory controls to the target ceilings established for per capita hospital expenditures, use and capacity in each planning area. Existing and new regulatory controls would be applied with increasing severity on providers in planning areas where target ceilings were exceeded: successive mandatory cuts would be made in hospital capacity, in hospital reimbursement (and inpatient physician reimbursement, see below), in allowed capital investments, etc., until performance fell within the target ceilings. Providers in planning areas where performance fell within the target ceilings would be exempt from such controls, as would any providers in other planning areas who could demonstrate to the regulators' satisfaction that their patient population was not contributing to the area's excess expenditures, use and capacity. This performance-related regulatory approach (called "quasi-lidding" for short) forces society to make decisions on how much hospital care is enough; gives providers maximum opportunity and incentive to perform well so as to escape regulation; minimizes regulation to where it is needed; provides measurable objectives to coordinate and evaluate regulation; and points regulation toward an eventual budgetary "lid."

-- Strengthen incentives on regulators and communities to reduce excess hospital capacity. The most powerful incentive to make the difficult trade-offs necessary in reducing excess hospital capacity is cost. The present trend to shift the cost burden away from the local level to the national level -- via national accounts and tax subsidies in private insurance, and via federal open-ended financing of Medicare and Medicaid -- tends to insulate local areas that overbuild hospital capacity from the cost consequences of their excesses. (This trend will likely produce an extremely centralized regulatory apparatus). Private and public health insurance programs should take steps to shift a significant but equitable amount (particularly the open-ended portion) of hospital expenditures back to the state, community and even individual level where it is incurred, to help build local pressure for controlling excess capacity. A second type of incentive is to publicize comparative rates of per capita hospital capacity, use and expenditures (vs. target ceilings) across planning areas. The variations are startling, and publicity may create pressure on planning areas to perform better. Finally, the provision of grants to assist reduction and buy out debt obligations, and to support conversion of acute inpatient facilities to other health and social services or even to civic or commercial use, may provide a more positive inducement to retire excess hospital capacity.

## 2. Policy Actions to Reduce Excess Hospital Demand

While this report deals more fully with direct reduction of excess hospital supply, it also recommends that actions be taken simultaneously to reduce demand. The following policy actions address both consumer and physician-induced demand, and employ all three major cost control approaches -- cost sharing, alternative systems, and lid-oriented regulation. A more detailed discussion of these actions may be found in Chapter V.B.

-- Encourage consumer cost-sharing. Strong front-end deductibles and coinsurance in hospital insurance coverage, with a maximum limit on the consumer's cost share, will reward consumers who economize on medical care and seek out efficient providers, while still providing complete financial protection from undue expense. The cost-share should be subsidized on an income-related basis for lower-income consumers. Except for low income persons, front-end ambulatory care should not be insured (so as to avoid over-use of ambulatory care similar to present over-use of hospital care); rather, front-end coinsurance and deductibles on hospital care should be made sufficiently large -- $500 to $1000 -- that hospital care does not appear more financially attractive than ambulatory alternatives. Employers and unions could encourage cost-shared insurance by offering it as a choice to employees in lieu of their present coverage, with the employee allowed to pocket any savings in premium costs as tax-free income or additional fringe benefits. Government could eliminate tax subsidies for front-end hospital insurance, or even place premium taxes upon it.

-- Encourage alternative delivery systems. HMO, Health Care Alliances (e.g. insurance plans covering a limited number of more efficient providers and charging reduced premiums) and other alternative delivery systems with incentives to reduce excess hospital use should be encouraged. Business, labor and providers can sponsor such systems and offer them as a choice to employees. Federal and state governments can enact enabling and assistance legislation which makes it easier for consumers and providers to participate in these alternative systems. Alternative delivery systems should be particularly encouraged in areas with excess hospital use, in order to stimulate competitive pressure on the traditional system, rather than in underserved areas where their competitive effect is less relevant.

-- Reduce increases in physician manpower, especially hospital-oriented specialists. Present manpower policies are projected to increase the physician-to-population ratio 50%, and the ratio of surgical specialists to population by 80%, by 1990, greatly exacerbating excess hospital demand particularly in professionally attractive areas where hospital-oriented specialists tend to concentrate excessively. Since present physician-to-population ratios, particularly for hospital-oriented specialists, appear far more than adequate to effectively serve the population, these increases should be reduced as much as possible, and efforts should be made to better distribute physicians by location (see below) and specialty. Physician manpower could be moderated by reversing present policies to expand medical schools and by limiting foreign medical graduate immigration. Hospital-oriented specialty manpower could be restrained by severely limiting residency training support, and by conditioning other federal and state support of hospitals and medical schools upon reduction in residencies. Medical schools could be similarly encouraged to better train physicians in ambulatory alternatives to hospital care.

-- Place performance-related controls on inpatient physician reimbursement and hospital insurance cost-sharing. Physicians are perhaps the single most powerful determinant of hospital use and capacity. In the present system they have every incentive to overuse and overequip hospitals, and little incentive not to. Physicians are largely unaffected by present planning and regulatory efforts to contain hospital expenditures. It is extremely important to begin placing pressure on physicians to control hospital expenditures, use and capacity. In planning areas where per capita hospital capacity, use and expenditures exceed target ceilings, inpatient physician fees could be reduced in successive increments until performance came within the ceilings. This would act as an incentive for physicians to discourage increases in hospital capacity, to use ambulatory alternatives to hospital care, and perhaps even to avoid the controls by locating in areas where target ceilings were not exceeded.* To give consumers incentive to seek ambulatory alternatives to hospital use (and to support excess capacity reduction), performance-related controls could also require mandatory front-end cost-sharing in health insurance policies in those planning areas where insured subscribers had per capita hospital use and expenditures exceeding the target ceilings (the ceilings would be adjusted to the demographic characteristics of the subscribers in applying such controls).

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* Relocation in underserved areas could be enhanced by encouraging more attractive organizational arrangements there, especially by encouraging multispecialty groups to set up formal branches in such areas. This combination of making over-served areas less attractive (by competition from alternative delivery systems and by reimbursement regulation) and making underserved areas more attractive (by improved organizational arrangements) might begin to alleviate physician maldistribution, itself a cause of excess hospital use and capacity.

## E. Federal Actions to Directly Reduce Excess Hospital Capacity

Coercive authority to reduce hospital capacity currently resides at the state level, and federal programs do not offer sufficient leverage to reduce capacity if used alone. In most states neither the public nor private sector adequately understand or have the technical tools to reduce excess hospital capacity. Federal actions should therefore be directed to building the climate of support and the technology by

-- setting specific federal guidelines;
-- encouraging the states, HSAs and the private sector to exercise leadership and take action;
-- building general public support;
-- developing the technical tools of population-based planning and performance-related (quasi-lid) regulation;
-- coordinating federal programs with state, local and private efforts;
-- conducting and supporting research and demonstration projects.

### 1. Building the climate of support

Because public support is crucial to the success of excess hospital capacity reduction, high level attention and talent must be directe to building it. The following actions, if carefully timed, might encourage the states and the private sector to begin exercising leadership and action:

-- Informal consulation with key leaders in state government, business, labor, medicine, hospitals, and voluntary organizations sponsoring hospitals. Consultation should affirm federal intent, solicit advice, identify obstacles facing each interest group, request support, offer assistance, and hopefully persuade the various parties to step out front.

-- Visible federal leadership. Others will be encouraged to lead if the federal government itself visibly steps out front.

-- Provide the technical tools. Most lay leaders feel rather naked and unarmed if they must negotiate with or, if necessary, confront providers. They and their staffs must have the facts and the technical understanding to use those facts if they are to feel confident in stepping out front on this issue.

The following actions, if carefully timed, might build general public support:

-- Disseminate the facts on excess hospital capacity in the popular press and media, and in the various trade media reaching each important interest group. The research of the last 15 years demonstrating excess use and capacity should be made available in jargon-free language to reporters and journalists, and given as much press as the so-called technological medical marvels. Strengthening the public relations capability of agencies conducting health services research and planning research would aid this effort. HSAs (Health Systems Agencies) can also help disseminate these facts.

-- Disseminate the facts on each area's per capita hospital expenditures, use and capacity. The public should know about the great variations in use and capacity, and where its own community stands in relation to others. This will require disclosure by hospitals of pertinent data, and summary of the data in a simple comparative format for each area. HSAs can help collect, prepare and disseminate these facts.

-- High level announcement of federal policy to reduce excess hospital capacity. The federal government should stage a campaign of high-level statements and issue papers. Initial statements would express concern, and detail the magnitude of excess hospital capacity and its effects on use and expenditures, building up at an appropriate time to a statement of a federal policy to encourage reduction of excess hospital capacity, with accompanying "white papers," conferences, and other newsworthy events. This policy statement should include specific national goals and objectives (see B and C above) as guidelines for federal, state and private action. These goals and objectives should be included in the national goals and guidelines required by law in P.L. 63-641. The Congress could include such goals and objectives in legislation appropriating assistance for state and private actions.

-- Support from respected and authoritative sources. Blue ribbon commissions, Congressional and state legislative hearings, statements of support by respected business and labor organizations, will generate media coverage and build public confidence in excess hospital capacity reduction. The federal government could encourage such actions.

## 2. Building the technical tools

The following actions would develop the technical capability to reduce excess hospital capacity.

-- Develop and disseminate population-based planning methods to states, HSAs, and the private sector. Studies now scattered throughout the research literature must be drawn together and packaged in a readily available and convenient format for planners to select safe population-based targets for hospital beds, service facilities, labor and assets (see Chapter IV.B). Conferences could help educate planners on these methods. Further research refining these methods should be conducted. Research is particularly urgent on methods to identify hospitals with excessive admissions and patient days, on practical ways to measure hospital intensity-capacity, and on determining the impact of new high intensity services on health levels so that safe population-based target ceilings can be specified (see Chapters I.C and IV.D and E).

-- Assist states to develop improved regulatory methods. The actions of the various states should be followed and evaluated, and promising results circulated among states and HSAs. Conferences for state planners and regulators would help ideas to circulate and identify areas where federal help would be appreciated. Anticipated state needs are discussed in Section F.2 below; developmental studies should be made on these needs. Model statutes and regulatory methods might help states take action. Study should be made of regulatory methods which incorporate rewards and penalties for provider performance to meet planning targets for use and capacity (quasi-lid methods).

-- Develop data systems to monitor per capita hospital expenditures, use and capacity by planning area. These data systems will assist population-based planning, and monitor both provider and planning performance* (and also educate the public to the great variations in use and capacity). Design studies should examine the key data needed, the data sources, and how the data will be analyzed (see Chapter IV.B). Attention should be given to a simple format to display key summary data so that policy-makers and the public can judge the comparative performance of providers and planners across planning areas (see Chapter V.D.5).

## 3. Coordinating federal health programs with state and private efforts

The following actions would bring the considerable leverage of federal programs to bear on excess hospital capacity reduction. Because these efforts would be coordinated with state and private efforts, they would prevent retaliatory discrimination against elderly and low-income federal beneficiaries. However, these actions realistically face considerable political and administrative rigidity common to all large bureaucratic systems, and they will need constant high level attention to succeed.

-- Medicare, Medicaid and the Federal Employees Health Benefits Program should actively identify state and private efforts to reduce hospital capacity, and seek to technically and financially aid well-founded efforts wherever possible. Trust fund monies should be available for this purpose. Mechanisms to expedite cooperative action and to constructively bend the rules, where possible, may be especially helpful. These programs should participate in the demonstration projects suggested in point 4 below. Medicare and Medicaid research and development efforts on provider reimbursement methods should study ways to include rewards and penalties for providers to meet planning targets for hospital use and capacity (quasi-lid reimbursement). These programs should also begin exploring ways to relate state-matching formulas (and perhaps even premiums) to how well planning areas in the state are within target ceilings for capacity, use and expenditures (see Chapter V.C.4).

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* Population-based use and expenditure data will not only measure cost performance but also measure how equitably hospital services are distributed among various population sub-groups. Equity will be extremely critical to monitor in a situation of tight supply.

- Veterans Administration hospitals, Public Health Service hospitals and other federal acute hospitals should cooperate with local planning efforts, and HSAs should have a mechanism to appeal to higher federal authority when they feel they are not obtaining cooperation.
- Federal loans and guarantees for hospitals, currently in excess of $2 billion, should be strongly curtailed. No support should be available in areas exceeding planning target ceilings unless such support would result in decreased capacity in such areas.

### 4. Conduct and evaluate demonstration projects

The federal government should offer grants and solicit proposals from interested states and communities wishing to conduct demonstration projects to reduce excess hospital capacity. These demonstrations should be limited to a manageable number of the best qualified projects (e.g. committed sponsors with clout), and should include a variety of approaches. Each demonstration should be evaluated for its impact on health, utilization, capacity and expenditures. The federal government should provide technical and financial support for these demonstrations. Both HSAs and the private sector could help initiate and organize demonstration project proposals.

## F. State Actions to Directly Reduce Excess Hospital Capacity

The states currently have the legal power to reduce or close a hospital, but very few of them have passed legislation or established the regulatory apparatus to do so. The states should direct their actions toward

- encouraging private sector action,
- building general public support,
- strengthening their legislative and regulatory powers in ways that aim at eventually placing a budgetary "lid" on hospital expenditures and resources.

Chapters IV, V and VI suggest a number of strategies to organize and administrate these actions, which states may tailor to their particular situation.

### 1. Buiding the climate of support

The state should take the same type of actions to build the climate of support as recommended for the federal government (see E.1 above).

2. Strengthening controls aimed at a "lid"

The following actions may be helpful:

- Set population-based planning targets to reduce excess hospital capacity. A first step for any state is simply to enunciate specific goals and objectives for state and local hospital capacity, use and expenditures. Even in the absence of additional regulation, such goals and objectives would guide communities, providers, planners and existing regulation as to the state's eventual intentions. They would legitimate and encourage voluntary private sector efforts to reduce capacity (and deter the financial community from providing capital for excess capacity). We recommend the use of target floors and ceilings (see Section C above) as the best approach for the state to set local goals and objectives. The state could then set a goal of reducing hospital capacity in incremental steps of 10% every five years in planning areas exceeding the target ceilings, with emphasis on retiring whole hospitals. State and local public short-term hospitals should be included in such planning, and be reduced or retired if appropriate.

- Include efficiency and planning criteria as legal grounds to reduce or revoke a hospital license. The state should pass legislation permitting the proper state authorities to appropriately reduce or revoke the license of a hospital after a due process showing that the hospital or selected service departments were unnecessary on the basis of efficiency and planning criteria. We recommend the approach to criteria and standards suggested in Chapter IV.D, where first the state's target ceilings on capacity and target floors on occupancy are used to identify which planning areas have excess capacity, and then the various criteria suggested are used to determine which hospitals and service departments in the planning area might most appropriately be retired. The criteria should be stringently applied until the planning area has been brought within the target ceilings and floors (quasi-lid licensure reduction). (See Chapter V.D.2 for other licensure reduction suggestions.)

- Tie Blue Cross and commercial insurance reimbursement of hospitals and inpatient physician charges to the state's Medicaid reimbursement principles. Unless all hospital reimbursement is controlled, controls on Medicaid reimbursement will not constrain hospital costs but rather will invite discrimination against the poor. Reimbursement controls should operate on hospital charges and not permit the hospital to go back to the patient to recover additional amounts. (This does not mean that an insurance plan could not require patients to pay a specified portion of the charge as a cost-share.) We recommend a quasi-lid approach to reimbursement controls, whereby the severity of the controls in any planning area depends on how much that area exceeds target ceilings on per capita hospital expenditures, use and capacity.* Reimbursement rates would be successively curtailed until the planning area fell within the target ceilings (see Chapter V.D.3). We also recommend that such reimbursement controls be extended to inpatient physician charges, to motivate physicians to become involved in containing hospital expenditures, use and capacity.

-- Extend Certificate of Need controls to require approval of (1) major capital borrowing, gifts, and sale-leaseback arrangements by hospitals, (2) leasing of major capital equipment or space by hospitals, and (3) acquisition of any major capital equipment in a physician's office that would have required approval were it in a hospital. Certificate of Need should pay as much attention to intensity-capacity (increased labor and assets per bed) as to bed-capacity. Certificate of Need awards should be more sharply curtailed in planning areas where per capita hospital expenditures, use and capacity exceed planning targets (e.g. quasi-lid Certificate of Need approach). Any back-log of Certificates granted but not yet implemented should be called back for review and reapproval in such areas. (See Chapter V.D.1 for further discussion.)

-- Incentives for good provider performance. HMOs and other prepaid delivery systems that can demonstrate their per capita hospital use and capacity rates are less than area planning targets (after adjustment for enrollment demographics) should be exempt from reimbursement and Certificate of Need controls; otherwise they should not be exempt. Hospitals which can demonstrate they are "lean" (e.g. tight admission rates and length-of-stay) and do not contribute to high area utilization rates should be given favorable reimbursement and Certificate of Need treatment. As a negative incentive in planning areas where target ceilings are exceeded, non-exempt inpatient physician fees as well as hospitals reimbursement should be reduced mandatorily, to bring pressure on physicians to reduce excess hospital use and capacity.

-- Require hospital disclosure. Hospitals should disclose data necessary to monitor per capita hospital expenditures, use and capacity by planning area. Hospitals should also disclose revenues, and the disposition of any surplus of revenue over operating costs. The state should establish data systems which monitor these rates, including out-of-area use, for the population in each planning area. HSAs could operate such data systems.

-- Coordinate licensure, reimbursement, Certificate of Need, and health insurance rate controls. These controls should be sufficiently coordinated that they can be applied in concert in planning areas where per capita hospital expenditures, use and capacity exceed planning targets (see Chapter VI).

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* The target ceilings on expenditures would be adjusted for in-area expenditures incurred by out-of-area residents and out-of-area expenditures by in-area residents.

## G. Private Sector Actions to Directly Reduce Excess Hospital Capacity

The following private sector actions would encourage direct hospital capacity reduction:

-- Business and labor. Individually, business and labor groups can take actions to build the climate of support for hospital capacity reduction, including: informal suasive efforts with providers, with hospital trustees, and with the financial community who lend to hospitals (see Chapter V.C.1); educational efforts by unions for their membership; the tone of health insurance advertising; public statements by business and union leaders; and encouragement of more thorough media coverage of the problem (see Chapter V.C.3). More formally, as major buyers of health care, business and labor could organize coalition task forces at the community level to use their collective influence and purchasing power to negotiate reduction of excess capacity with community providers (see Chapter V.A.4 and D.6). National business and labor organizations could formally support goals for excess hospital capacity reduction, build general public support, disseminate the idea to the local level, and assist local efforts.

-- Providers. Private action by providers may forestall the need for stringent, detailed regulation, particularly if a "quasi-lid" approach to regulation is used. Hospitals may want to work together with HSAs to arrange mergers and conversions that allow hospital capacity to be retired. Medical and hospital associations may wish to begin educating their membership that direct reduction may be one of the less onerous and objectionable forms of cost control. Provider efforts must be credible and effective; if they fail to bring per capita hospital expenditures, use and capacity down within planning targets, providers may find themselves increasingly ignored in later regulatory steps, an undesirable result all-around.

## H. Health Systems Agency Actions to Directly Reduce Excess Hospital Capacity

Given the current lack of either public or state and federal support, Health Systems Agencies (HSAs) have extremely limited power to act. Were an HSA to come forward with a plan to reduce hospital capacity, it would probably be shot down immediately, with subsequent damage to the HSA's vital relationships with the community and providers. HSAs should therefore concentrate on building understanding and support while improving their technical capacity to identify excess hospital capacity that could be retired.

-- HSAs should pursue informal discussions with local business, labor and political leaders as well as providers on the problem of excess hospital capacity. They should also attempt to educate local reporters. They should seek to place business, labor and provider leaders on their boards sympathetic to cost containment as well as the quality and availability of health care. They should encourage the development of private sector coalitions concerned with cost containment, and assist such coalitions with staff and data (see Chapter V.A.4). Such efforts must be staged diplomatically so as not to move faster than community and provider understanding can accept.

-- HSAs should develop population-based planning data and methods (see Chapter IV.B); they should know per capita rates of hospital expenditures, use and capacity by type of service in their area, and be able to compare these rates on an age-sex adjusted basis to rates in other areas. By comparison of rates with suggested target ceilings (see Section C above), they should identify how much reduction might be appropriate and develop options as to where such cuts might best be made. Such planning should be kept in-house until the climate appears ripe to come forward with it. Such quiet in-house homework will be useful even before this time in the informal persuasive efforts suggested above and in guiding the HSAs' efforts with Certificate of Need (see Chapter IV.C). As capacity reduction becomes an acceptable idea, or if and when the federal government and states set explicit planning targets, the HSA will then be ready to assist the community and providers in arriving at orderly and appropriate capacity reduction plans.

# APPENDIX A

## ESTIMATES OF SAVINGS FROM EXCESS HOSPITAL CAPACITY REDUCTION

The following estimates use extremely simple, crude estimation methods and assumptions. Hospital data assumptions are based on national averages, and would be about as typical of any community or individual hospital as the national average weather. Nevertheless, these estimates provide a ball-park feel for the costs and savings implied by a "hospital capacity reduction program," particularly if applied extensively throughout the country.

### Summary of Estimates

We assume a "typical" community having the following population-based hospital statistics in 1974:

Beds per 1000 persons: $BPT_o = 4.39$

Patient Days per 1000 persons: $DPT_o = 1207$

Occupancy $OCC_o = 75.3\%$

Cost per Patient Day (adjusted): $CPD_o = \$113$

These are simply the national averages reported for all non-federal short term hospitals in 1974. The cost of acute hospital care (neglecting VA or other federal acute hospital care, and neglecting physician costs associated with acute inpatient care) in this typical community in 1974 was

Total Yearly Hospital Costs per 1000 persons:

$$\begin{aligned} TYC_o &= CPD_o \cdot DPT_o \\ &= \$113 \cdot 1207 \\ &= \$136{,}400 \end{aligned}$$

Now assume a capacity reduction program that had reduced beds by 10% in 1974. To estimate the possible gross savings, we consider four cases (for simplicity of estimation we neglect all availability considerations):

Case 1. Individual Beds -- close 10% of the beds in each service department of each hospital.

Case 2. Service Departments -- close 10% of beds in each hospital by closing one or more whole service departments at each hospital.

Case 3. Hospitals -- close whole hospitals until the community has 10% less beds.

Case 4. Moratorium -- forbid new beds, service departments and hospitals until population rises by 10%. We assume the same rate of growth in the community as in the U.S.

For each case, where appropriate, we shall consider the following variations for reducing this capacity

(a) Licensing down hospital size
(b) Buying out hospital capacity
(c) Conversion to other use.

Also for each case, we estimate savings with and without the "reverse" Roemer effect, namely, that lowering beds lowers use. This allows us to see the impact of varying amounts of lower use. With a Roemer effect, we estimate from the best data available (see Appendix D) that a 10% reduction in beds produces a 4.4% drop in patient days, and we crudely assume that this drop is independent of whether we close beds, service departments, or whole hospitals.

The annual savings from capacity reduction are reported as a percentage of what the total yearly cost ($TYC_o$) would have been had the reduction not been in effect. These savings are thus achieved every year. If $TYC_o$ inflates each year, the savings inflate proportionately. Thus a one-time capacity reduction does not halt inflation, but it does reduce costs compared to what they would have been had no reduction occurred.

The expense of the program is estimated as a one-time initial expense to reduce the capacity. We neglect program staff expense, and assume unemployment effects transient and negligible for simplicity.

The most important assumptions of our estimation method is that each annual hospital budget is assumed to have 15% fixed capital costs (debt service, depreciation, replacement funds), 45% fixed operating costs and 40% variable costs under a 10% reduction in capacity.

The results of a 10% capacity reduction are as follows:

(Note: a subscript "n" means the new value due to reduction. A subscript "o" means the old value had no reduction occurred.)

(1) With no Roemer effect

Beds/1000: $BPT_n$ = 3.95, a drop of 10%

Days/1000: $DPT_n$ = 1207, no change

Occupancy: $OCC_n$ = 83.7%, a relative rise of 11.1%

Cost per day: $CPD_n$ depends on the case, see Table 2 below

(2) With Roemer effect

Beds/1000: $BPT_n$ = 3.95, a drop of 10%

Days/1000: $DPT_n$ = 1154, a drop of 4.4%

Occupancy: $OCC_n$ = 80.0%, a relative rise of 6.2%

Cost per day: $CPD_n$ depends on the case, see Table 2 below

The annual savings implied are listed in the next table, along with the one time initial expense of reduction. Table 1 states the savings as a percentage decrease in annual hospital costs; e.g. if annual hospital costs in any year were 100% had no capacity reduction occurred, then reduction would decrease these costs by x%. Table 3 states these savings in dollar terms for the non-percentage-minded. (Note: In Table 1 and 3, the increased gross savings from "buy-out" compared to "licensing down" are largely fictitious; this increase is simply the foregone annual capital cost of the capacity bought out. On a discounted basis the apparent increase may be a loss, since except for interest we must pay in present dollars but recover the same amount in future dollars. The estimates for "licensing down" give a better feel for the true savings.)

TABLE 1. CRUDE ESTIMATE: ANNUAL SAVINGS IN HOSPITAL COSTS AND INITIAL EXPENSE PER 1000 PERSONS DUE 10% CAPACITY REDUCTION (AS A PERCENT OF ANNUAL TOTAL COST IN THE ABSENCE OF REDUCTION.)

| Case | Initial Expense per 1000* | Possibility of Conversion** | Annual Savings per 1000 (no Roemer effect) | Annual Savings per 1000 (with Roemer effect) |
|---|---|---|---|---|
| 1. Individual Beds | | | | |
| - license down | 0 | poor | 0.6% | 2.5% |
| - buy out | 15% | poor | 2.1% | 3.8% |
| 2. Service Depts. | | | | |
| - license down | 0 | some | 2.0% | 3.8% |
| - buy out | 18% | some | 3.5% | 5.3% |
| 3. Hospitals | | | | |
| - buy out | 22% | good | 6.0% | 7.8% |
| 4. Moratorium | | | | |
| - in nth year after 1974 up to 1985 | 0 | none | $\frac{n}{11} \cdot 6.0\%$ | $\frac{n}{11} \cdot 7.8\%$ |

Note: In 1974, 100% = $136,400 per 1000 persons

*Note: Initial expense is a one-time expense reported as a % of annual hospital cost in the year that the reduction occurs.

**Note: In our method, savings from conversion to other use does not show up as savings in hospital costs, but as an offsetting reduction in initial expense. It cannot be estimated unless the return on capital of the other use is known. Mergers could also reduce initial expense of closing whole hospitals.

The remarkable result of this admittedly crude estimate is that capacity reduction has a rather high pay-off, which improves the stronger the Roemer effect one assumes. Even where there is initial expense, the investment repays itself in three or four years (but only if the savings can be captured for the same kitty that incurred the expense). In the next table we show how the above savings are achieved in terms of changes in the cost per day and patient days. In Table 3 we show these annual savings in dollar terms for a "typical" community of 500,000 people.

TABLE 2. CRUDE ESTIMATES: ANNUAL HOSPITAL COSTS PER 1000 PERSONS ASSUMING 10% CAPACITY REDUCTION (REPORTED AS A PERCENT OF COSTS IN THE ABSENCE OF CAPACITY REDUCTION)

| Case | No Roemer Effect: | | | With Roemer Effect: | | |
|---|---|---|---|---|---|---|
| | Cost per day | Days per 1000 | Total Cost per 1000 | Cost per day | Days per 1000 | Total Cost per 1000 |
| 1. Individual Beds | | | | | | |
| - license down | 99.4% | 100% | 99.4% | 102.1% | 95.6% | 97.5% |
| - buy out | 97.9% | 100% | 97.9% | 100.6% | 95.6% | 96.2% |
| 2. Service Depts. | | | | | | |
| - license down | 98.0% | 100% | 98.0% | 100.7% | 95.6% | 96.2% |
| - buy out | 96.5% | 100% | 96.5% | 99.1% | 95.6% | 94.7% |
| 3. Hospitals | | | | | | |
| - buy out | 94.0% | 100% | 94.0% | 96.5% | 95.6% | 92.2% |
| 4. Moratorium | varies by year | | | varies by year | | |
| - in the nth year after 1974 (up to 1985) | (see next table) | | | (see next table) | | |
| Note: In 1974, 100% = | $113 | 1207 days | $136,400 | $113 | 1207 days | $136,400 |

Inspection of the above table shows that if patient days fall due to capacity reduction (reverse Roemer effect), the cost per day rises unless whole hospitals are closed. Nevertheless, the decreased use more than offsets the rise in cost per day, so that annual total costs fall. Even if use does not decline (no Roemer effect), total cost falls considerably because of the more efficient use of space. In Table 3 we convert the annual savings of Table 1 to dollar terms for a "typical" community of 500,000 people described by the characteristics on page 3:

TABLE 3. CRUDE ESTIMATE: ANNUAL SAVINGS IN HOSPITAL COSTS IN FIRST YEAR (1974) DUE TO 10% CAPACITY REDUCTION IN A COMMUNITY OF 500,000

| Case | Initial Expense | Annual Savings in first year (no Roemer effect) | Annual Savings in first year (with Roemer effect) |
|---|---|---|---|
| 1. Individual Beds | | | |
| - license down | -0- | $ 410,000 | $1,700,000 |
| - buy out | $10,200,000 | 1,430,000 | 2,600,000 |
| 2. Service Depts. | | | |
| - license down | -0- | 1,400,000 | 2,600,000 |
| - buy out | 12,300,000 | 2,400,000 | 3,600,000 |
| 3. Hospitals | | | |
| - buy out | 15,000,000 | 4,100,000 | 5,300,000 |
| 4. Moratorium | | | |
| - in first year (1975) | -0- | 370,000 | 480,000 |
| - in eleventh year (1985) at 1974 dollars | | 4,100,000 | 5,300,000 |

Note: Total annual hospital cost in absence of capacity reduction = $68,200,000 in 1974. As the annual total cost inflates in later years, the annual savings increase proportionately.

Conclusions

1. Clearly closing whole hospitals has the highest payoff. A straight buy-out repays itself in three to four years (depending on Roemer effect). Closing hospitals by merger, rate squeezing, or delicensing reduces the initial expense, and conversion also helps reduce or recover some of it.

2. Licensing down beds and service departments has high pay-off if the Roemer effect holds, and little risk if it does not. Buying out beds and service departments is a more even question, and depends on the exact situation; our estimates are too crude to judge buy-out of beds and service departments on an average basis.

3. Although it takes longer to achieve, a moratorium eventually has a pay-off as good as closing hospitals, but at no initial expense. While buy-out of hospitals achieves large savings immediately, it takes the first three to four years to recover the initial expense, whereas the moratorium is achieving small gains in those years. However, the moratorium has difficulty adjusting to shifts in population over its lifetime, creating availability problems. This is unlikely to be a problem in urban areas where people are accustomed to drive twenty minutes to a hospital.

## DETAILED ESTIMATES*

### Case 1. Closing Individual Beds

A. Licensing Down. We assume a licensing authority with power to reduce the capacity of each hospital by 10%. (This is obviously not the way to do it; we assume this simple cross-the-board cut for estimation purposes only). We further assume simplistically that each hospital is identical and cuts each service department capacity by 10% (the latter might be slightly more realistic if all hospitals are compelled to relate charges to costs by service type; otherwise hospitals would close only unprofitable services.)

1. No Roemer Effect.

By assumption patient days do not decline:

$$DPT_n = DPT_o$$

From sub-appendix B, equation 6, the new cost per day ($CPD_n$) at each hospital is roughly:

$$CPD_n = \frac{\text{fixed cost}}{365 \cdot ADC} + \frac{\text{variable cost}}{365 \cdot ADC}$$

$$= \frac{60\%\ CPD_o \cdot PFC}{1 + \frac{\Delta ADC}{ADC_o}} + 40\%\ CPD_o$$

where $CPD_o$ is the old cost per day and $ADC_o$ is the old average daily census, and where $\Delta ADC$ is any change from $ADC_o$, and PFC is any percent change in total fixed cost due to the capacity reduction. With no Roemer effect, ADC does not change ($\Delta ADC = 0$).

Closing largely empty beds is assumed to save no more than 1% of fixed costs (PFC = .99). Hence the new total yearly cost ($TYC_n$) per 1000 persons becomes:

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* See Sub-appendix A for a brief description of the general estimation procedure.

$$TYC_n = CPD_n \cdot DPT_n$$

$$= \left((.99) \cdot \frac{60\% \; CPD_o}{1} + 40\% \; CPD_o\right) \cdot DPT_o$$

$$= (99.4\% \; CPD_o) \cdot DPT_o$$

$$= 99.4\% \; TYC_o$$

From Appendix A, eq. 2, the annual savings per 1000 persons are given by:

$$AST = TYC_o - TYC_n = (1 - .994) \; TYC_o$$

$$\boxed{\begin{aligned} \text{Annual Savings} &= 0.6\% \; TYC_o \\ &= \$818 \text{ per 1000 persons in the first year} \end{aligned}}$$

2. With Roemer Effect

Patient days decline by 4.4% as discussed in sub-appendix D:

$$DPT_n = 95.6\% \; DPT_o$$

The cost per day rises because fixed costs are now being spread over fewer patient days. We assume each hospital shares the 4.4% decline in average daily census equally.

$$CPD_n = (.99) \; \frac{60\% \; CPD_o}{(1-.044)} + 40\% \; CPD_o$$

Then total yearly costs for 1000 persons are given by:

$$TYC_n = CPD_n \quad DPT_n$$

$$= (102\% \; CPD_o) \cdot (95.6\% \; DPT_o)$$

$$= 97.5\% \; TYC_o$$

Thus even though cost per day rises as fixed costs are spread over fewer patient days, this rise is more than offset by the reduction in patient days. The annual savings are:

$$\text{Annual Savings} = TYC_o - TYC_n$$

$$\boxed{\begin{aligned} \text{Annual Savings} &= 2.5\%\ TYC_o \\ &= \$3400 \text{ per 1000 persons in the first year} \end{aligned}}$$

This annual saving is accomplished with $\boxed{\text{no expense}}$ other than staffing the program itself. (We assume unemployment effects are transient and negligible.)

B. Buy Out. In this approach we buy out the beds either voluntarily or coercively. The only difference in savings from the former licensing down approach is that fixed capital costs are reduced by the amount of beds bought out, e.g. 10%. Assuming annual fixed capital costs contribute 15% $CPD_o$ (see sub-appendix C, eq. 2), and reducing them by 10%, to 13.5% $CPD_o$, and further subtracting 1% of fixed cost because of savings in fixed operating costs due to the closed beds, we have:

$$CPD_n = \frac{57.9\%\ CPD_o}{1 + \frac{\Delta ADC}{ADC_o}} + 40\%\ CPD_o$$

1. No Roemer Effect. By assumption patient days do not decline. Hence

$$DPT_n = DPT_o$$

Since average daily census is unchanged ($\Delta ADC = 0$), we have

$$CPD_n = 97.9\%\ CPD_o$$

Then total yearly cost per 1000 becomes

$$\begin{aligned} TYC_n &= CPD_n \cdot DPT_n \\ &= (97.9\%\ CPD_o) \cdot DPT_o \\ &= 97.9\%\ TYC_o \end{aligned}$$

$$\boxed{\begin{aligned} \text{Annual Savings} &= 2.1\%\ TYC_o \\ &= \$2900 \text{ per 1000 persons in the first year} \end{aligned}}$$

2. With Roemer Effect. By sub-appendix D, eq. 9, patient days decline 4.4%:

$$DPT_n = 95.6\%\ DPT_o$$

Assuming each hospital has an equal 4.4% decline in average daily census, the cost per day becomes:

$$CPD_n = \frac{57.9\%\ CPD_o}{1 - .044} + 40\%\ CPD_o = 100.6\%\ CPD_o$$

Total yearly cost per 1000 is given by

$$\begin{aligned} TYC_n &= CPD_n \cdot DPT_n \\ &= (100.6\%\ CPD_o) \cdot (95.6\%\ DPT_o) \\ &= 96.2\%\ TYC_o \end{aligned}$$

$$\boxed{\begin{aligned} \text{Annual Savings} &= 3.8\%\ TYC_o \\ &= \$5200 \text{ per 1000 persons in the first year} \end{aligned}}$$

The apparent increased savings compared to "licensing down" is largely fictitious, since it is just the capital cost bought out. In fact, in present-value terms, it may represent a loss since we pay now and recover the same initial cost. An estimate of the initial cost, assuming we buy out roughly 10 years of annual capital costs (15% $CPD_o \cdot DPT_o$, see sub-appendix C) on the 10% of capacity retired, is

$$\boxed{\begin{aligned}\text{Initial Cost} &= 10 \text{ years} \cdot 10\% \cdot (15\%\ CPD_o \cdot DPT_o) \\ &= 15\%\ TYC_o \\ &= \$20{,}500 \text{ per 1000 persons}\end{aligned}}$$

C. Conversion of vacated space to other use appears impractical under this approach, as the space is scattered throughout the hospital.

## Case 2. Closing Service Departments

Our estimation procedures for this case are more crude than for all the other cases estimated.

A. Licensing Down. The licensing agency presumably closes whole service departments (rehab, obstetrics, pediatrics) until beds in the community are reduced 10%. This approach creates savings intermediate between closing scattered beds and closing whole hospitals.

Assume each hospital has one or another service departments closed until it has 10% less beds. (This is not the way to do it. It is only for estimation purposes.) Its remaining service departments receive increased use from patients of other hospitals where these services were closed down; assume these balance the patients lost at its own closed service departments, so that each hospital has the same proportion of total patient days as before.

1. No Roemer Effect. Days per 1000 in the community remain unchanged:

$$DPT_n = DPT_o$$

The cost per day is lowered because a hospital with fewer departments has less department-specific fixed operating overhead costs. We assume department operating overhead is 20% of $CPD_o$ (see sub-appendix C), and that this overhead is reduced 10% in each hospital. There is no change in $ADC_o$.

$$CPD_n = \frac{58\%\ CPD_o}{1+(0)} + 40\%\ CPD_o = 98\%\ CPD_o$$

Then total yearly cost per 1000 persons becomes:

$$TYC_n = DPC_n \cdot DPT_n$$

$$= (98.0\%\ CPD_o) \cdot DPT_o$$

$$= 98.0\%\ TYC_o$$

Annual Savings = 2.0% $TYC_o$

= \$2000 per 1000 persons in the first year

2. With Roemer Effect. Days per 1000 fall 4.4% (see sub-appendix D):

$$DPT_n = 95.6\%\ DPT_o$$

Cost per day falls because of decreased department overhead, but is offset by a decrease in average daily census of 4.4%:

$$CPD_n = \frac{58.0\%\ CPD_o}{1-(.044)} + 40\%\ CPD_o = 100.7\%\ CPD_o$$

The total yearly cost per thousand persons is:

$$TYC_n = CPD_n \cdot DPT_n$$

$$= (100.7\%\ CPD_o) \cdot (95.6\%\ DPT_o)$$

$$= 96.2\%\ TYC_o$$

$$\boxed{\begin{aligned}\text{Annual Savings} &= 3.8\%\ TYC_o \\ &= \$4800 \text{ per 1000 persons in the first year}\end{aligned}}$$

Licensing down has $\boxed{\text{no initial cost.}}$

B. Buying Out. The program buys up service departments until beds are reduced 10%. The estimation assumptions are as before under section A above:

1. No Roemer Effect. Patient days remain unchanged

$$DPT_n = DPT_o$$

Cost per day falls because 10% of both fixed annual capital costs and fixed department overhead are eliminated. Average daily census is unchanged.

$$CPD_n = \frac{56.5\%\ CPD_o}{1 + (0)} + 40\%\ CPD_o = 96.5\%\ CPD_o$$

Then total yearly cost per 1000 persons is:

$$\begin{aligned}TYC_n &= CPD_n \cdot DPT_n \\ &= (96.5\%\ CPD_o) \cdot DPT_o \\ &= 96.5\%\ TYC_o\end{aligned}$$

$$\boxed{\begin{aligned}\text{Annual Savings} &= 3.5\%\ TYC_o \\ &= \$4100 \text{ per 1000 persons in the first year}\end{aligned}}$$

2. With Roemer Effect. Patient days fall 4.4% (by sub-appendix D)

$$DPT_n = 95.6\%\ DPT_o$$

Cost per day falls as in paragraph 1 above, but is offset by a fall in ADC of 4.4%

$$CPD_n = \frac{56.5\%\ CPD_o}{1 - .044} + 40\%\ CPD_o = 99.1\%\ CPD_o$$

Then total yearly cost per 1000 becomes:

$$\begin{aligned} TYC_n &= CPD_n \cdot DPT_n \\ &= (99.1\%\ CPD_o) \cdot (95.6\%\ DPT_o) \\ &= 94.7\%\ TYC_o \end{aligned}$$

Annual Savings = 5.3% $TYC_o$

= \$6500 per 1000 persons in the first year

The initial cost of buying out is estimated by assuming we buy up 10% of annual capital costs for about 12 years:

Initial cost = 18% $TYC_o$

= \$24,500 per 1000 persons

C. Conversion. Even further savings are possible if the space vacated by the service department reduction can be converted to other use, such as ambulatory care, long-term care, commercial or civic use. Under "licensing down" this income would accrue to the hospital. Under "buying out," the income would be a negotiating chip to lower the price paid for the space bought out, thereby lowering the initial cost of the program. Caution should be exercised that the new use not be for medical care that would raise the community's annual medical bill, e.g. a new ambulatory care source in the hospital might increase hospital use.

## Case 3. Closing Whole Hospitals

A. Licensing Down. It is not clear that a licensing authority could close down an institution legally unless it were in flagrant violation of codes. The annual savings would be identical to that in Section B below, but with no initial expense.

B. Buy Out. The program buys up whole hospitals, or assists mergers until community beds are reduced 10%.

1. No Roemer Effect. Patient days remain as before.

$$DPT_n = DPT_o$$

Cost per day at the remaining hospitals falls because average daily census rises by 11% (e.g. formerly the remaining hospitals had 90% of the patients, now they have 100%). There is no decline in fixed costs at the remaining hospitals (PFC = 0).

$$CPD_n = \frac{60\%\ CPD_o}{1 + (.11)} + 40\%\ CPD_o$$

Then new total yearly cost per 1000 persons is:

$$\begin{aligned} TYC_n &= CPD_n \cdot DPT_n \\ &= (94\%\ CPD_o) \cdot DPT_o \\ &= 94\%\ TYC_o \end{aligned}$$

$$\boxed{\begin{aligned} \text{Annual Savings} &= 6\%\ TYC_o \\ &= \$8200 \text{ per 1000 persons in the first year} \end{aligned}}$$

2. With Roemer Effect. Patient days fall by 4.4%

$$DPT_n = 95.6\%\ DPT_o$$

Cost per day at the remaining hospitals falls because average daily census rises by 6.2%, e.g. the remaining hospitals formerly had 90% of all patient days, now they have 95.6% of them.

$$CPD_n = \frac{60\%\ CPD_o}{1+(.062)} + 40\%\ CPD_o$$

Then total yearly costs per 1000 persons becomes:

$$\begin{aligned} TYC_n &= CPD_n \cdot DPT_n \\ &= (96.5\%\ CPD_o) \cdot (95.6\%\ DPT_o) \\ &= 92.2\%\ TYC_o \end{aligned}$$

$$\boxed{\begin{aligned} \text{Annual Savings} &= 7.8\%\ TYC_o \\ &= \$10{,}600 \text{ per 1000 persons in the first year} \end{aligned}}$$

The initial cost to buy out these hospitals is estimated by assuming we must buy 10% of annual capital costs in the community for 15 years

$$\boxed{\begin{aligned} \text{Initial Cost} &= 15 \text{ years} \cdot 10\% \cdot (15\%\ TYC_o) \\ &= 22.5\%\ TYC_o \\ &= \$30{,}700 \text{ per 1000 persons} \end{aligned}}$$

## Case 4. Moratorium

In this approach, instead of reducing beds, we place a moratorium on beds and let population grow until beds per 1000 decline 10%. An estimate of the time necessary comes from the following table for the U.S., where the moratorium freezes beds at their 1974 level. The table shows population, acute beds per 1000 persons, acute patient days per 1000 persons and occupancy for past and future years.

| Year | Pop. | Beds/1000 | Days/1000 | Occ. |
|---|---|---|---|---|
| 1965 | 194M | 3.81 | 1058 | 76.0% |
| 1970 | 205M | 4.14 | 1179 | 78.0% |
| 1972 | 209M | 4.23 | 1164 | 75.2% |
| 1974 | 212M | 4.39 | 1207 | 75.3% |

| | | | No Roemer Effect | | With Roemer Effect | |
|---|---|---|---|---|---|---|
| Projected estimates | | | Days/1000 | Occ. | Days/1000 | Occ. |
| 1980 | 225M | 4.14 | 1207 | 79.7% | 1178 | 77.9% |
| 1985 | 235M | 3.96 | 1207 | 83.5% | 1155 | 79.9% |
| 1990 | 247M | 3.77 | 1207 | 87.7% | 1131 | 82.1% |

In a community experiencing population growth equal to the U.S. average, it takes slightly more than eleven years to achieve a 10% reduction in beds per 1000 persons. This represents a capital saving to the community in beds not built which would have been built had the moratorium not been declared. It also represents a saving in operating costs, since increased occupancy allows more efficient use of space and staff. To a good approximation, the annual savings in 1985 will equal that for Case 3 (closing whole hospitals). The annual savings in prior years will be successively less. We will approximate the savings in the nth year after 1974 by a straight line (linear) relation.

1. No Roemer Effect:

$$\text{Annual Savings in nth year} = \frac{n}{11} \cdot 6.0\%\ TYC_o$$

2. With Roemer Effect:

$$\text{Annual Savings in nth year} = \frac{n}{11} \cdot 7.8\%\ TYC_o$$

## SUB-APPENDIX A: Estimation Method

The basic estimation method is based on the formula:

(total yearly cost per 1000 persons) =
(patient days per 1000 persons) x (average cost per day)

or in symbols:

$$TYC = DPT \cdot CPD \tag{A-1}$$

To obtain the annual savings, we calculate the total yearly cost (TYC) before and after the bed reduction plan,

(annual savings per 1000 persons) =
(total yearly cost per 1000 persons before) minus (after)

or in symbols

$$AST = TYC_o - TYC_n \tag{A-2}$$

We calculate the cost of the bed reduction program solely in terms of the initial costs to achieve the capacity reduction (e.g. to buy out the beds, etc). We do not consider the annual cost of staffing the capacity reduction program, assuming that these expenditures are already subsumed under planning, Certificate of Need, and other regulatory activities. We also neglect temporary unemployment effects, assuming the bed reduction is phased slowly enough that any decline in hospital employees can occur by natural attrition or that they find other employment swiftly enough so as not to appear on unemployment or welfare roles.

Note that in calculating savings we neglect any savings in physician expense due to decreased hospital utilization, assuming that some of this physician expense may be incurred on an ambulatory basis and the remainder will be offset by a slight rise in ambulatory utilization.

## SUB-APPENDIX B: Cost per Day

The effect of a decline in capacity on cost per day (CPD) is estimated by dividing each hospital annual budget into two parts: fixed costs and variable costs. Fixed costs include both those capital and operating costs which are unavoidable under a permanent 10% increase or decrease in use (patient days). Variable costs are those costs which are proportional to use within this 10% permanent variation.

$$\text{Total cost} = \text{Fixed Cost} + \text{Variable Cost} \qquad \text{(B-1)}$$

The cost per day can be found by dividing total cost by the annual number of patient days at the hospital, given by multiplying the average daily census times 365 days in a year.

$$\text{CPD} = \frac{\text{Total Cost}}{365 \cdot \text{ADC}} = \frac{\text{Fixed Cost}}{365 \cdot \text{ADC}} + \frac{\text{Variable Cost}}{365 \cdot \text{ADC}} \qquad \text{(B-2)}$$

To estimate equation 2 we will assume that, before the capacity reduction program, all hospitals had 60% of their annual budget in fixed cost and 40% in variable cost:

$$\text{CPD} = \frac{\text{ADC}_o \cdot 60\%\ \text{CPD}_o}{\text{ADC}} + 40\%\ \text{CPD}_o$$

$$= \frac{60\%\ \text{CPD}_o}{1 + \frac{\Delta\text{ADC}}{\text{ADC}_o}} + 40\%\ \text{CPD}_o \qquad \text{(B-3)}$$

where $\frac{\Delta\text{ADC}}{\text{ADC}_o}$ is simply the percentage change in average daily census (ADC):

$$\text{ADC} = \text{ADC}_o + \Delta\text{ADC} \qquad \text{(B-4)}$$

Equation 3 simply states that if the census at a hospital increases (decreases) then CPD at that hospital falls (rises) because the fixed costs get spread over more (less) patient days.

If to reduce capacity, the program buys out some of the capital costs, then fixed costs (FC) are reduced by some percentage (PFC)

$$FC_n = PFC \cdot FC_o \qquad \text{(B-5)}$$

and only the new fixed costs need be spread over the new patient days

$$CPD_n = \frac{FC_n}{365 \cdot ADC_n} + 40\%\ CPD_o$$

or

$$CPD_n = \frac{PFC \cdot 60\%\ CPD_o}{1 + \frac{\Delta ADC}{ADC_o}} + 40\%\ CPD_o \qquad \text{(B-6)}$$

Equation 6 is used to calculate $CPD_n$.

## SUB-APPENDIX C. Estimate of Average Hospital Budget

A proper estimate of the savings from capacity reduction in a community would calculate the effect on cost per day in each hospital, multiply by the number of patient days at that hospital, and sum over all hospitals in the community. For our crude estimate, however, we shall assume all hospitals have identical statistics equal to national population-based (per 1000 persons) averages.

Our estimation method requires us to break out the hospital budget. We have assumed in Appendix B that the average hospital budget divides into:

$$60\% \text{ fixed cost plus } 40\% \text{ variable cost} \qquad \text{(C-1)}$$

Further, if we buy out beds and equipment, this will reduce fixed capital costs of a hospital. It is therefore important to separate fixed costs into fixed capital and fixed operating costs. We make a national average estimate as follows:

In 1974 hospitals reported

plant assets = \$28.06 million
other assets = \$13.78
total assets = \$41.84

and annual expenses of

adj. inpatient expense = \$28.97 million
adj. outpatient and other expense = \$3.78 million
all expense = \$32.75 million

We assume that all plant assets depreciate over 25 years and replacement cost inflates 8% per year. (Alternatively, if plant was financed from debt, we assume this is debt service cost.) = \$2.60 M annualized plan capital expense.

We assume 80% of other assets are depreciable equipment, depreciating over 10 years with 12% replacement inflation = \$1.90 M annual equipment capital expense (or alternatively debt service). The remaining 20% are assumed part of non-depreciable inventory and are included in variable costs.

We assume that the proportion of these annual capital costs chargeable to outpatient care is one-half the ratio of annual outpatient expense to all annual expense, or 6%. The remaining 94% of annual capital costs is chargeable to inpatient expense, or \$4.23M. The assumed ratio of annual capital cost to all inpatient cost is therefore 4.23/28.97 or:

$$\text{annual capital cost} = 15\% \text{ of total yearly hospital cost} \quad (C-2)$$

If service departments (e.g. obstetrics, coronary care units, etc.) are closed, we must know fixed operating costs associated with department overhead. In addition to lower capital cost, presumably a hospital with fewer service departments has lower fixed operating costs than a hospital with more departments. These costs are associated with unavoidable department-specific staffing and administrative costs. For purposes of a crude estimate we shall assume the average hospital budget as follows:

| | | | |
|---|---|---|---|
| Fixed cost | | 60% | |
| -- annual fixed capital cost | 15% | | |
| -- fixed general operating overhead | 25% | | |
| -- fixed dept.-specific operating overhead | 20% | | |
| Variable cost | | 40% | |
| Total | | 100% | (C-3) |

To illustrate the sensitivity of the estimates to this budget assumption, we show below what happens to the results of Table 1 (which employes the above budget assumption of 60% fixed cost and 40% variable cost) if the budget assumption were altered to 40% fixed cost and 60% variable cost.

SENSITIVITY CHECK: ESTIMATED ANNUAL SAVINGS FROM TABLE 1 UNDER ALTERED BUDGET ASSUMPTION

| Case | Annual Savings per 1000:<br>no Roemer effect | with Roemer effect |
|---|---|---|
| Individual Beds | | |
| - licensing down | | |
| 60% fixed cost (from Table 1) | 0.6% | 2.5% |
| 40% fixed cost (altered assump.) | 0.4% | 3.0% |
| Hospitals | | |
| - buy out | | |
| 60% fixed cost (from Table 1) | 6.0% | 7.8% |
| 40% fixed cost (altered assump.) | 4.0% | 6.6% |

The savings are crudely the same order of magnitude under the altered budget assumption. Note that in licensing down individual beds under the Roemer effect, savings increase somewhat as fixed cost is reduced, because the savings really come from reduced days rather than reduced cost per day. In closing down whole hospitals, both reduced days and reduced cost per day play a role; with only 40% fixed cost saved in the closed hospital, savings decline somewhat.

## SUB-APPENDIX D. Patient Days per Thousand Persons

Research has shown a so-called "Roemer effect," that increasing the number of beds per 1000 persons (BPT) increases patient days per 1000 persons (DPT). Not every additional bed gets filled, as once thought, but use does tend upwards.

We infer from such research that there is also a "reverse" Roemer effect, that lowering beds lowers use. This inference can be argued on two counts. First, obviously if we close beds until occupancy reaches 100%, any further reduction in beds will force reduced usage. Second, in the most sophisticated study of the Roemer effect to date, May found in a national survey that after controlling for patient demand factors that patient days (DPT) correlated only weakly with beds (BPT) but strongly with occupancy (OCC). This suggests that the higher the occupancy, the less the incentives to encourage patient usage. There is now some empirical evidence from England supporting this "reverse" Roemer effect where beds have been closed.

To estimate this effect we shall use May's result, and assume that a 1.0% rise in occupancy $(\frac{\Delta OCC}{OCC_o} = 1\%)$ causes a proportional 0.7% fall in usage $(\frac{\Delta DPT}{DPT_o} = -0.7\%)$; viz

$$\frac{\Delta DPT}{DPT_o} = e \cdot \frac{\Delta OCC}{OCC_o} \qquad \text{(D-1)}$$

where empirically the elasticity, e, is:

$$e = -0.7, \text{ for } OCC_o = 75.4\%$$

We assume e remains constant if OCC changes less than 10%.

Noting that by definition patient days are related to occupancy and beds

$$DPT = OCC \cdot 365 \cdot BPT \qquad \text{(D-2)}$$

and that

$$OCC_n = OCC_o + \Delta OCC \qquad \text{(2a)}$$

$$DPT_n = DPT_o + \Delta DPT \qquad \text{(2b)}$$

$$BPT_n = BPT_n + \Delta BPT \qquad \text{(2c)}$$

we have from equation 2 before the program:

$$DPT_o = OCC_o \cdot 365 \cdot BPT_o \qquad \text{(2d)}$$

and after the program:

$$DPT_n = OCC_n \cdot 365 \cdot BPT_n$$

or:

$$DPT_o + \Delta DPT = (OCC_o + \Delta OCC) \cdot 365 \cdot (BPT_o + \Delta BPT) \qquad \text{(2e)}$$

Using equation 1 and 2d and a little straightforward algebra to eliminate $DPT_o$ and $\Delta DPT$ in equation 2e, we obtain the following relationship between the percent change in occupancy due to a percent change in beds:

$$\frac{\Delta OCC}{OCC_o} = \frac{-\left(\frac{\Delta BPT}{BPT_o}\right)}{1 - e + \frac{\Delta BPT}{BPT_o}} \qquad \text{(D-3)}$$

Substituting equation 3 in equation 1, we obtain the following relation for the percent change in patient days due to a percent change in beds:

$$\frac{\Delta DPT}{DPT_o} = \frac{-e\left(\frac{\Delta BPT}{BPT_o}\right)}{1 - e + \left(\frac{\Delta BPT}{BPT_o}\right)} \qquad \text{(D-4)}$$

Substituting equation 4 in to equation 2b, we find the new patient days per 1000 persons due to reducing beds:

$$DPT_n = DPT_o \left(1 + \frac{\Delta DPT}{DPT_o}\right) \qquad \text{(D-5)}$$

We use equation 3 and 4 to calculate the percent change in occupancy $\left(\frac{\Delta OCC}{OCC_o}\right)$ and patient days $\frac{\Delta DPT}{DPT_o}$ due to a percent change in beds $\left(\frac{\Delta BPT}{BPT_o}\right)$, where e is given by equation 1. Equation 5 then yields the new patient days ($DPT_n$).

Example: Assume a 10% reduction in beds in a community having occupancy of 75.3%. Then

$$\frac{\Delta BPT}{BPT_o} = -.10 \qquad \text{(D-6)}$$

Change in occupancy: Substituting equation 6 in equation 3

$$\frac{\Delta OCC}{OCC_o} = \frac{-(0.10)}{1 - (-0.7) + (-.10)} = \frac{.1}{1.6} = .0625 \qquad \text{(D-7)}$$

Substituting equation 7 in equation 4a, occupancy rises from 75.3% to 80.0%, a relative rise of 6.25% which is well within the range of validity (< 10%) assumed in equation 1.

Change in patient days: Substituting equation 6 in equation 4

$$\frac{\Delta DPT}{DPT_o} = \frac{-\ (-0.7)\ (-.10)}{1 - (00.7) + (0.10)} = -.04375 \qquad \text{(D-8)}$$

Thus a 10% decrease in beds produces a 4.4% decrease in patient days.

New patient days: Substituting equation 8 into equation 5

$$DPT_n = 95.625\% \cdot DPT_o \qquad \text{(D-9)}$$

Thus patient days per 1000 persons fall to 95.6% of their former value after a 10% reduction in beds.

NOTE: In any particular community the reverse Roemer effect could be greater or less than that measured by May in the University of Chicago national survey. For example, May controlled for travel time to the hospital; if beds are decreased by closing hospitals, travel time may increase, further discouraging use. Thus our result, equation 4 and 8, could be conservative. To make an even more conservative estimate, smaller absolute values of e can be used. Thus, at the extreme when e = 0, we find by inspecting equation 3 and 4, that DPT does not decline at all, and occupancy rises more rapidly in the expected manner. If there is no decline in use, savings from bed reduction occur only if the cost per day is lowered, as discussed earlier.

# APPENDIX B

## LEGAL ISSUES IN EXCESS CAPACITY REDUCTION

by Linda Stokes, J.D.
InterStudy

The proposed methods for eliminating excess hospital beds present a wide range of complex legal questions, each of which requires careful and detailed examination. In general, the more coercive the bed reduction mechanism, the more substantial the legal attack it may provoke from adversely affected hospitals. Legislators, planners, and regulators wanting to mandate hospital bed elimination should be prepared to defend against the probable legal challenges to the methods they propose. This analysis merely highlights some of the major issues involved. Before the federal government, a state government, or the private sector initiates any hospital bed reduction program, it should make a thorough analysis of the legal obstacles it may face.

### A. Governmental Actions

A mechanism to reduce excess hospital bed capacity which depends upon governmental action may face two types of challenges to its constitutionality: (1) that there is no constitutional authority for the federal or state government to take the action; or (2) that even if the federal or state government has the authority to take the action, it has exceeded some other constitutional limitation on the exercise of that authority.

### 1. Federal v. State Authority To Regulate Hospitals

Evaluating the legality of any bed reduction mechanism that relies on governmental action raises the preliminary question: Does the federal government or the state governments have the authority to regulate the hospital industry? The analysis begins with the Tenth Amendment to the U.S. Constitution:

> "The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the States respectively, or to the people."

In other words, for the federal government to have the power, the Constitution must expressly or impliedly grant it; and for the state governments not to have the power, the Constitution must expressly or impliedly deny it.

If Congress has the power to legislate controls over the hospital industry, the power must rest on a clause in the Constitution. The two possible constitutional pegs are the commerce clause --

> "The Congress shall have the Power . . . (3) To regulate Commerce with foreign Nations, and among the several States . . ."

and the taxing and spending clause --

> "The Congress shall have the Power to lay and collect Taxes. . . to . . . provide for the . . . general Welfare of the United States . . ."

The constitutional basis for most existing federal legislation in health matters has been the taxing and spending clause, not the commerce clause. While legislation calling for direct federal regulation of the hospital industry would have to be based on the commerce clause, indirect regulation has been effected through legislation based on the taxing and spending clause. The Medicare and Medicaid programs and the Hill-Burton hospital construction assistance programs have rested on the taxing and spending powers of Congress, but the legislative restrictions and conditions on the uses of the federal funds have had substantial regulatory effects upon the hospitals. Congress clearly has the power to place conditions on the use of the funds it appropriates to carry out federal spending programs, and it has exercised this power frequently. Accordingly, hospitals would have little basis to challenge the legality of a federal hospital capacity reduction program based on a restrictive spending approach.

Less clear is the power of Congress to regulate hospitals directly through legislation which is not tied to a federal spending program, such as national health insurance. The Supreme Court has never decided whether the commerce clause gives Congress the authority to control the hospitals directly, and the only time the federal government has attempted to regulate the industry was through the wage and price controls of the Economic Stabilization Program. Although the constitutionality of the Economic Stabilization Act was challenged, the courts did not resolve the issue before the controls were lifted. The Supreme Court has construed the commerce clause broadly, following the "affectation doctrine" that Congress has the power to regulate any activity, whether interstate or intrastate in nature, if the activity has any appreciable effect upon interstate commerce, whether the effect is direct of indirect. NLRB v. Jones & Laughlin Steel Co., 301 U.S. 1 (1937). The proponents of direct federal regulation of hospital capacity would therefore have to prove that hospital capacity has an appreciable effect on interstate commerce. While in recent years the Supreme Court has rarely found that Congress did not have the power to enact legislation purporting to regulate an instrumentality of interstate commerce, there is little precedent for such regulation in the health sector.

In contrast, aggrieved hospitals would have difficulty making a case that state legislatures lack the power to regulate matters such as hospital supply. Protecting the public health has been the textbook example of a traditionally local matter to be left to the state's exercise of its police power for benefit of its citizenry. Jacobson v. Massachusetts, 197 U.S. 11 (1905); Buck v. Bell, 274 U.S. 200 (1927); Carolene Products v. U.S., 323 U.S. 18(1944). Major regulatory controls over the health sector have operated at the state level, including regulation of hospital rates, licensing of providers, regulation of insurance carriers, and certificate-of-need laws. The states would lose their well-grounded authority to regulate the health industry only if the federal government were to enact an all-encompassing program of federal regulation which preempts the field. To avoid subjecting the hospitals to conflicting and inconsistent federal and state laws and regulations, any federal legislation to regulate hospital bed capacity should be enacted with the express intent to supercede state laws in the area. Absent such express intent, the courts do not always find an implied intent, especially where the subject matter is one which has traditionally been regulated on the state level. Missouri Pacific RR Co. v. Porter, 273 U.S. 341 (1927).

## 2. Limitations on the Exercise of Governmental Authority

If constitutional authority can be found for the federal or state government to control the supply of hospital beds, a second question must be addressed: Does the mechanism the government selects to effect the reduction violate a constitutional limitation of the exercise of the governmental authority?

Relevant constitutional limitations on the federal government's exercise of its powers include the due process requirements of the Fifth Amendment --

> "...nor shall any person...be deprived of life, liberty, or property, without due process of law..."

and the eminent domain limitations of the Fifth Amendment --

> "...nor shall private property be taken for public use, without just compensation."

Both of these limitations also apply to actions by state governments through incorporation in the Fourteenth Amendment, which also contains the equal protection clause --

> "...nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws."

Although there is no equal protection clause which expressly applies to actions of the federal government, the Supreme Court has held that an action by the federal government that denies equal protection of law would constitute a "deprivation of liberty" in violation of the Fifth Amendment due process clause. Bolling v. Sharp, 347 U.S. 497 (1954).

The hospital bed elimination methods that the federal or state governments might adopt fit into the following general categories: (a) condemnation; (b) licensing down; (c) applying financial pressure on the hospitals by regulating rates; (d) applying financial pressure on the hospitals by placing restrictions on federal or state payments to the hospitals; and (e) regulating third-party payments to the hospitals. The adoption of any of these methods may be challenged as exceeding one or more of the constitutional limitations on the exercise of governmental authority.

a. Condemnation. -- The case presenting the clearest authority for a state government to close down excess hospital beds is where a hospital has an occupancy rate that is so low that its continued operation constitutes a danger to the public health. A state order that a hospital with a dangerously low occupancy rate close its doors is not really a condemnation in the constitutional sense of taking private property for public use. It is instead a valid exercise of the state's traditional police power to protect the public health. The only constitutional limitation on such state action is the Fourteenth Amendment equal protection clause: the action may not be arbitrary or capricious, and the standards for determining the dangerous condition must be definite and must be applied equally to all hospitals. If the threat to the public health is immediate, no due process hearing is required, and just compensation need not be paid.

As discussed supra, the federal government's authority to take regulatory action of this kind is much less certain. Because the Fifth Amendment does not confer independent authority on the federal government to take private property, the authority for the taking must rest on some other constitutional provision. The Fifth Amendment merely limits the manner in which the property may be taken.

If a state government or the federal government wishes to condemn excess hospital beds which do not impose an immediate threat to the public health, it must do so in accordance with the Fifth and Fourteenth Amenment limitations of the exercise of the power of eminent domain. If the state or federal governmental agency simply closes down all or part of a hospital, it might not be able to show that the property was taken "for public use" as required by the Constitution. This challenge could be averted if the government could convert or facilitate the conversion of the condemned beds to another public use. Otherwise the government would have to show that "public use" includes more than such conventional tangible public uses as taking private land for highway construction. The concept of public use has been broadly construed, but it requires the demonstration of a benefit or advantage to the public. If challenged, the government would have to demonstrate that the closing of unneeded hospital beds produces a public benefit. This demonstration would be facilitated if the legislation authorizing the condemnation of the beds declares, in its statement of purpose, a finding that elimination of excess hospital beds confers a definite benefit upon the general public. The legislation should also clearly specify the criteria for determining which hospital beds are to be taken for the public benefit, and the criteria must then be applied equally to all hospitals to avoid the challenge that a particular hospital is being denied equal protection of the laws.

The condemnation of excess hospital beds would also require the payment of "just compensation," and the owner of the condemned property would be entitled to notice and an opportunity to be heard at a proceeding to determine the fair market value of the property taken. There is, however, no constitutional requirement that the state conduct this hearing before it takes the property.

b. Licensing down. -- Another governmental approach to reducing excess hospital capacity is revoking or restricting existing hospital licenses. This method would have to operate at the state government level where present licensing authority exists, absent major federal legislation for hospital licensure superceding the state laws.

While a state unquestionably has the power to license health care providers, there are serious constitutional limitations on its exercise of that power.

For example, if a state tightened its licensing standards and gave the licensing agency the authority to revoke unexpired licenses validly issued according to less stringent standards, affected hospitals could challenge the action as an unconstitutional deprivation of property without due process of law. Although the courts once characterized a license as a gratuity which the state could give and take away at will without benefit of a hearing, that doctrine has clearly changed, and today a modification in an existing license almost certainly requires a hearing. American Airlines v. C.A.B., 359 F.2d 624 (D.C. Cir., 1966), cert. denied, 385 U.S. 843. In addition, the Federal Administrative Procedure Act provides that no withdrawal or suspension of a license is valid unless the agency first gives the licensee notice and an opportunity to demonstrate or achieve compliance. Most states have passed similar legislation to govern the actions of their administrative agencies.

Even if a state licensing agency did not attempt to apply more stringent hospital licensing standards to a hospital until the expiration of the hospital's existing license, it would still have to give the hospital a hearing on the issue. The hospital's vested reliance interest may entitle it to a hearing for nonrenewal, even if the state takes the view that there was no right to a hearing on the granting of the license in the first place. Bankers Life & Casualty Co. v. Cravey, 69 S.E.2d 87 (Ga. 1952).

A further constitutional limitation on the state's power to license hospitals is that the criteria upon which it grants or denies the licenses must be precisely defined and equally applied to all hospitals. Anything less would give adversely affected hospitals the opportunity to allege denial of equal protection of the laws. The State of New York has passed legislation giving the Commissioner of the New York State Health Planning Commission the authority to --

> "...suspend, limit, or revoke a general hospital operating certificate, after taking into consideration the total number of beds necessary to meet the public need, and the availability of facitilies or services such as preadmission, ambulatory, home care or other services which may serve as alternatives or substitutes for the whole or any part of any such hospital facility, and after finding that suspending, limiting, or revoking the operating certificate of such facility would be within the public interest in order to conserve health resources by restricting the number of beds and/or the level of services to those which are actually needed." (Chapter 76, Laws of 1976)

It is suggested that the weakness of this statute, which also gives the affected hospitals notice and an opportunity to be heard, is in the vagueness of the criteria it specifies for determining which hospital beds are in fact unneeded.

c. Applying financial pressure by regulating hospital rates. -- Government regulation of hospital rates as a method of forcing excess hospital beds out of use is part of the public utility model for hospital regulation. Such a program would therefore best operate at the state level. To find that a particular industry is a public utility requires two showings: (1) that the business can be grouped within the broad classification of businesses "affected with a public interest," and (2) that there is a specific legislative pronouncement that the business in question is a public utility and is subject to the regulations provided. Williams v. Standard Oil Co., 278 U.S. 235 (1931). If the government has the authority to regulate the affected industry, the laws by which it accomplishes the regulation must have a reasonable relation to a proper legislative purpose and be neither arbitrary nor discriminatory, in order to satisfy the requirements of due process. Nebbia v. New York, 291 U.S. 502 (1934).

The state's power to regulate an industry as a public utility does not include the power to destroy the industry. Stone v. Farmers Loan & Trust Co., 116 U.S. 307 (1886). Public utilities are entitled to a reasonable rate of return, the denial of which may constitute a compensable Fifth Amendment taking of property. State action setting unreasonably low rates for services provided in unneeded hospitals may amount to a taking of property requiring the payment of just compensation. In any case, the criteria for determining the need for particular beds and the rates that may be charged for them must be clearly defined and equally applied. A procedure reducing rates for hospitals based on their particular circumstances would be subject to the constitutional requirement of a trial-type hearing, at the very least, and would be suspect on equal protection grounds. Jordan v. American Eagle Fire Ins. Co., 169 F.2d 281 (1948).

d. Applying financial pressure by placing restrictions on the use of state and federal funds by hospitals. -- One of the proposed methods for forcing hospitals to close down unneeded beds is to deny some or all of the federal or state reimbursement for services provided in the unneeded beds. This method follows the approach of the capital expenditure review provisions of Section 1122 of the Social Security Act. Congress clearly has the power to place conditions on the uses of the funds it appropriates to carry out its spending programs such as Medicare. Congress may also define the terms and conditions upon which federal funds may be disbursed to the states, and the states may not alter those conditions. King v. Smith, 392 U.S. 309 (1968). It is therefore questionable whether a state government, on its own initiative, could restrict Medicaid payments to hospitals it deemed to be unneeded, absent federal authority to do so. A state could, of course, restrict the use of its own funds for this purpose, but an effective capacity reduction program would probably require the coordination of both state and federal reimbursement standards. Again, the criteria for determining bed need must be clearly defined and equally applied.

e. Regulating third-party reimbursement to hospitals. -- Governmental action restricting third-party reimbursement to hospitals for services provided in unneeded beds also raises some constitutional questions. Insurance regulation has traditionally been the responsibility of state governments, with Congress formalizing its hands-off policy with the enactment of the McCarran-Ferguson Act of 1945 (59 Stat. 33, 15 U.S.C.A. 1011-1015). The commerce clause gives Congress the implied authority to regulate insurance, but until Congress preempts the field by doing so, any hospital bed reduction program that depends on regulating insurers would have to be imposed at the state level.

If state legislation makes unlawful any third-party payments to hospitals determined to be unneeded, or if it sets differential rates for this reimbursement, the legislation must precisely define its standards for determining bed need. Furthermore, the state must apply the standards to all hospitals and insurers equally to avoid violating the equal protection clause.

## B. Private Sector Actions

Most of the legal problems inherent in the proposed governmental actions to eliminate excess hospital capacity are not involved in bed reduction efforts the private sector might undertake. Possible private sector actions do, however, present other serious legal questions.

Private pressure on hospitals to eliminate excess beds in the form of third-party payers and large buyers refusing to deal with particular hospitals may give rise to violations of tort and antitrust law.

Affected hospitals might have a cause of action against the insurers and buyers for libel, or for trade libel, if the insurers and buyers failed to exercise due care in determining which hospitals to blacklist and in publishing this information. The hospitals could sue the insurers and buyers for the resulting damage to their businesses. If the buyers and insurers relied on the Health Systems Agencies (HSAs) to determine which hospitals were unneeded, the buyers' and insurers' liability would be eliminated, but the HSAs could be liable for defamation. The extent of governmental tort immunity of the Health Systems Agencies needs further study.

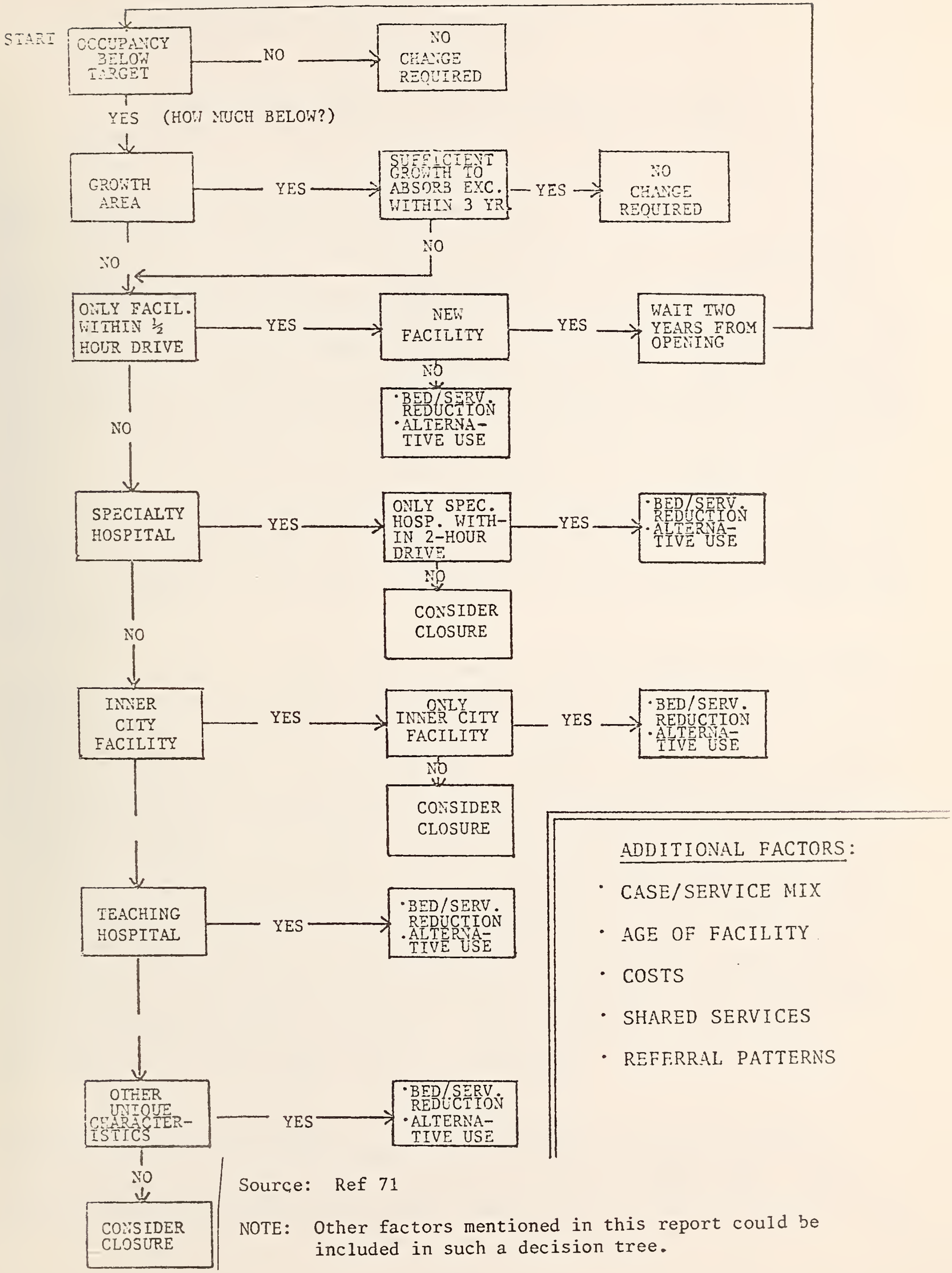
Business and labor groups may also be reluctant to join forces to exert pressure on hospitals to eliminate their excess beds, fearing that the action may violate the federal and state antitrust laws. The fact that a group boycott may be in the public interest as well as in the interest of the participants is by no means an air-tight defense to the antitrust suit likely to be brought by the boycotted hospitals.

The Supreme Court has found group boycotts to be illegal _per se_ under Section 1 of the Sherman Antitrust Act. _Fashion Originators' Guild of America, Inc._ v. _F.T.C._, 312 U.S. 457, 668 (1941). The effect of finding a boycott illegal _per se_ is that no defense of the boycott on social policy or economic grounds will succeed, and the courts will not consider the reasonableness of the methods used to effect the boycott. The Supreme Court decisions on group boycotts, however, have involved boycotts with commercial and economic purposes. Generally, the targets of these boycotts have been direct competitors of the boycott participants, and the participants have stood to gain a direct economic advantage. While there have been a few lower court decisions concerning boycotts with noncommercial and noneconomic motives, these cases present conflicting authority as to whether or not the Sherman Act is applicable or the per se rule is appropriate to noncommercial or noneconomic boycotts. One could build a case that consumer boycotts should not be covered by the antitrust laws because they are an extension of the free operation of the marketplace. One could also argue that such boycotts are protected by the First Amendment guarantees of freedom of speech and the right to petition. The counterargument is that the prohibition against boycotts is grounded, at least to some extent, in a fear that coercive powers of any kind exercised by private groups may be dangerous to a democratic society.

One possible way to avoid some of the antitrust implications of a group boycott of hospitals with unnecessary beds would be to obtain an exemption from the antitrust laws for such action. On the federal level, any exemption to the Sherman Act must be specified in amending legislation, which means that a majority in Congress would have to be convinced of the wisdom of the exception before any sector of the economy could be insulated from the laws. Similar exemptions from state antitrust laws would probably be needed as well. Proponents of hospital capacity reduction may wish to pave the way for the private sector's group actions to reduce excess hospital capacity by working to obtain the necessary antitrust exemptions for these actions.

# APPENDIX C

## A PRELIMINARY DECISION TREE FOR LICENSING DOWN


START
OCCUPANCY BELOW TARGET
NO
NO CHANGE REQUIRED
YES (HOW MUCH BELOW?)
GROWTH AREA
YES
SUFFICIENT GROWTH TO ABSORB EXC. WITHIN 3 YR
YES
NO CHANGE REQUIRED
NO
NO
ONLY FACIL. WITHIN ½ HOUR DRIVE
YES
NEW FACILITY
YES
WAIT TWO YEARS FROM OPENING
NO
·BED/SERV. REDUCTION ·ALTERNATIVE USE
NO
SPECIALTY HOSPITAL
YES
ONLY SPEC. HOSP. WITHIN 2-HOUR DRIVE
YES
·BED/SERV. REDUCTION ·ALTERNATIVE USE
NO
CONSIDER CLOSURE
NO
INNER CITY FACILITY
YES
ONLY INNER CITY FACILITY
YES
·BED/SERV. REDUCTION ·ALTERNATIVE USE
NO
CONSIDER CLOSURE
TEACHING HOSPITAL
YES
·BED/SERV. REDUCTION ·ALTERNATIVE USE
OTHER UNIQUE CHARACTERISTICS
YES
·BED/SERV. REDUCTION ·ALTERNATIVE USE
NO
CONSIDER CLOSURE

ADDITIONAL FACTORS:

- CASE/SERVICE MIX
- AGE OF FACILITY
- COSTS
- SHARED SERVICES
- REFERRAL PATTERNS

Source: Ref 71

NOTE: Other factors mentioned in this report could be included in such a decision tree.

# APPENDIX D

## Testimony for the Assembly Committee on Health
October 15, 1975

Prepared by Robert A. Derzon, Director of the
University of California, San Francisco Hospitals and Clinics

Mr. Chairman and Members of the Committee:

As a hospital administrator who shares your deep concern regarding the cost of health and hospital care, I am pleased to appear before you today. Before going further, you should know that I am here speaking as an individual hospital professional and not as a representative of the University of California or any other organized group of hospitals. You should also know that as a result of my experience, both past and present, I have biases that are an outgrowth of my experience in the health field over the last 18 years. While in California for the past 5 years, I have been a member of the Bay Area Comprehensive Health Planning Council, a past Trustee of the California Hospital Association, a current member of the Advisory Council to the California Health Facilities Commission, a consultant to the Federal Economic Stabilization Board and HEW, and a faculty member at U. C. in addition to my duties currently as Director of the UCSF Hospitals and Clinics.

In the 20 minutes or so that I will be before you, the UCSF Hospitals and Clinics will have expended $4,000 or approximately $200 per minute. Almost half of these expenses will be met by payments from various levels of government. Approximately $12.50 of the $200 minute will be paid by the State of California through Medi-Cal. Another $12.50 will be paid for by various counties and the remaining 3/4 of the governmental payments, or $75 per minute, will come from the Federal government under Medi-Care and Title XIX. The other $100 will be paid by various commerical insurance and from individuals. Three years ago, had I appeared before you, I would report to you that we were spending at U. C. - San Francisco at a lesser rate of $140 per minute or $2,800 for 20 minutes. These figures may shock you as they did me but they offer quick evidence that not only were hospital costs considerable, but that there is a significant rate in the growth of these expenses. They also point out that State government is a relatively small direct dollar purchaser even where 20 to 25 percent of our total activity is Medi-Cal

In the first half of my paper, I shall try to describe the forces that are escalating our expenditures and in the second half, suggest to you my personal ideas as to how these expenditures can be constrained. I do not believe that most individual hospital expenses can be totally stabilized and, in fact lowered. As a Committee, I believe you should be concerned about the cost of hospital care, the cost of providing a unit of service, and how the public can be assured of access to quality hospital care at the most moderate price feasible. In the long run, public programs and private insurance must meet the reasonable costs incurred by hospitals or, for all practical purposes, be prepared to deal with the bankruptcy of components of a vital public service industry.

What has happened to the cost of hospital care in California? I will not answer this in the overall because I think there are health economists who are better qualified to do so. It would be useful to you if I were to spend a few minutes describing the current costs of UCSF Hospital care; how these costs rose in the past 3 years; and what, in my view, are the principal factors that have raised our level of expenditures. You know that we are a somewhat unique hospital because we are a major referral and tertiary care teaching hospital for Northern and Central California. Each hospital has uniqueness but it is useful to look at our kind of a hospital because it dramatizes emphatically what the extent of pressures are in an organization which is required by its very special role to be at the forefront of scientific and technological advances. Our experience, therefore, is translatable throughout most segments of the hospital industry in varying degrees.

The fact sheet I have prepared compares expenses and changes in key expense groups between fiscal '73 and fiscal '76. Be reminded that the cost of living index will have risen about 36% during this same 3-year period. Gross expenses have risen from $35 million to $52 million budgeted this year - a percentage increase of 45%. Productivity in patient days of care is up 2.9%; outpatient and emergency care up 17.6% inpatient admissions are up 7.9% with the same 560 beds because of a lowering of length of stay; and numbers of interns and residents, a special output measure for us, is up 14%.

Selected views of the data will show that expenses have risen most rapidly in what we call the professional departments or those most directly concerned with patient care. Only a small part of those increase are attributable to additional employees. Labs, as an example, in the last 3 years rose nearly $1,000,000 or 36% in gross expenses. Only 6 new employees were added, but there was a 43.2% increase in tests and a 4.8% decrease in cost per test.

Direct professional services account for 74% of our total expenses. The so-called hotel services represents the balance and except for certain purchased items - utilities, food, and drugs - there has been less than average expense growth. Malpractice costs are highlighted and all too familiar. To negate the nearly one million dollar increase in malpractice premiums, we would have had to eliminate, through internal efficiencies, well over 100 employees.

Without going into considerable detail, I believe the factors forcing these increases are:

(1) Shorter stays and sicker patients -- The major hospital product, which is an inpatient day of care, keeps changing. A larger proportion of our patients are in special care categories, require more nursing time, more surgical time, and more diagnostic services. Utilization controls are working and pushing out of the patient mix, non-acutely ill patients who used to be in our wards.

(2) Diagnostic costs -- We are paying more to diagnose humans partially because of technology and scientific advances and partly due to defensive medicine. My guess is 65% science and 35% defensive. New diagnostic and therapeutic tools are extraordinarily expensive and are usually accompanied by significant professional fees. Some say our ability to diagnose now outstrips our ability to treat. It is hard for the best of us to weigh the economic costs against the gains in patient care. And even if we do, the predictability of patient demand in the medical market place is usually a poor guess.

(3) General inflation -- We are big buyers in the general market place for labor, goods, and services. We have the misfortune of buying large quantities of food, fuel, oil-based plastics, and paper products; all of which have soared.

(4) Malpractice costs -- I've already cited this factor

(5) Legislation and regulation -- Seismic safety is adding approximately 20% to each dollar of renovation or alteration. We have spent at least $200,000 in fees and time and effort in preparing environmental impact statements. Medi-Cal billing is so complex that we estimate it costs two times the expense of collecting from any one of the other 400 health insurance carriers with whom we deal. We will pay the State $230,000 to examine building plans for conformance to codes despite the fact the structural engineers we hired, developed the original code and are willing to certify that we conform. We have been paying bed taxes for CHP planning and a tax on our expenses for disclosure. I mention these only because every $200,000 item adds another $1.00 per day to the patient and 25¢ to the outpatient visit at U. C. Lawyers and accountants are now retained at substantial fees to handle these regulatory systems.

(6) Ease of borrowing to acquire plant or equipment. Unlike many businesses, most new capital in a hospital does not increase labor productivity but rather expands our armament to render patient care. At UCSF, we have borrowed very little. Loans have bought scanning equipment which adds \$350,000 per year to our operating expenses but finds brain tumors, and has bought a renovated X-ray Department. We have also borrowed to obtain labor-saving laundry equipment, one of the few areas where capital can improve productivity. Our loans equal less than 3% of our total annual expense. Some hospitals have borrowed up to 75 to 100 percent of their annual operating expenses and expanded their range of services and costs accordingly.

(7) The last two forces pushing up costs, not so much in our hospital, but in many, are idle capacity and work stoppages. Over-capitalization and under-utilization press costs upward. Empty beds probably cost 30 to 40% of full ones. The empty bed is only part of the problem. Partially utilized services and programs are the most costly of all. Poorly utilized services are usually inferior in quality and high in cost. One example should suffice. There are 35 heart catheterization labs in the Bay Area. The depreciation cost alone at today's prices on a busy unit doing 400 caths per year is \$100 per procedure. For a hospital doing 100 procedures a year, the cost of capital is \$300 - \$400 per procedure over the normal life of the equipment. Capital and labor costs of occasionally used operating rooms, nuclear medicine units, special laboratories, and intensive care units is just as striking. We estimate that a decision to have one more critical care bed adds \$100,000 per year in direct nursing service costs to U. C. Hospital. There are many expensive hospital services which are proven and essential but that should not be proliferated. We should weigh this massive stand-by cost against the costs of lesser convenience and additional regionalization.

You already know the costs of work stoppages in hospitals. These losses can only be recovered by spreading these costs forward to future patient stays. Work stoppages are calamitous to hospitals. Regrettably, work interruptions are increasing in frequency, and could be catastrophic to patients.

Now, let me turn from the disease to some potential cures.

## PART II

What can be done to constrain hospital costs in California? Fortunately, we still have choices. You have had the wisdom not to charge ahead foolishly.

There are good choices, in my view, and bad choices. The object of any cost control mechanism is a cost containment program that assures reasonable economic stability of a hospital industry. Most hospitals are not ripping off the public. Many, I know, are losing substantial sums of money and yet are efficiently managed. We have to impose regulation that is consistent, durable, equitable, understandable, and most important of all, administerable.

I have some concrete suggestions. They are hardly new ideas but I believe they are sound:

I. Join together Economic Control and Certificate of Need - I think this is absolutely essential. Both are regulatory processes. Certificate of need will control capital flow which I believe is the most significant device we have at the moment that can clearly limit unnecessary hospital costs. To attempt to divorce certificate of need from economics is hopeless. To ask the Health Facilities Commission to control cost without controlling capital flow and programs is fatuous. We had this experience during Phase II and Phase III of the Economic Stabilization Program when "B" agency approvals became the mandate for cost pass-throughs for rate exception increases at the Hospital Commission.

The Health Department, as a major purchaser of care - $2.2 billion this year cannot be objective as a cost regulator and as an issuer of certificates of need.

II. Licensure and Special Service Certification - The Department of Health has set the standards for hospital services through the licensing and permit procedures. These standards have already been established in Title XXII and ought to be applied immediately. There are at least 26 services for which standards are specified. Most do not but should have minimal volumes mandated by the Health Department. The Department should get on with the job of providing special permits where necessary and for requiring certification to an ever widening group of services which are now considered "supplemental" in Title XXII. It should withdraw permits promptly from those services which do not meet standards and issue cease and desist orders that close these services.

III. Certificate of Need - "Certificate of need" is a misnomer. We cannot certify in the State of California every service which is determined to be needed or that the public wants. It can be argued that "need" resembles wants and demands of a well-meaning but non-paying potential patient-consumer population.

Certificate of need legislation is important to California and should be designed now. In my view, the Health Facilities Commission is the State agency that should be the final arbiter for projects covered under a new law. The Commission should be limited to considering only those projects which have been deemed to be consistent with an approved health plan developed by local and State Planning agencies. The important difference is that the Commission should be able to refuse to issue a certificate of need even though a project is consistent with the plan. Further, the Commission should be prohibited from approving any project which is not consistent with the plan.

The Health Department should have final and absolute authority to license out of existence those facilities and services that do not meet clearly stated standards.

IV. Surplus Beds

Revise licensure for beds based on actual usage (last year's average census). A plan whereby each hospital is licensed for 125% of its last year's average medical surgical census; 135% of its average pediatric census; and 150% of its average OB census will quickly put hospitals on notice that bed supply is truly controlled. Although this may have no immediate impact on operating costs it will direct some trustees and hospital managements to reevaluate their public purpose, and will allow planners to make better decisions on needs for special programs and services. Some hospitals may be encouraged to realistically contemplate consolidation and bankers can be more realistic about hospital revenue projections. Licensure of additional beds would then require a Certificate of Need, carefully evaluated for its financial impact on the requesting hospital as well as other hospitals in the community.

V. Disclosure

Public disclosure of hospital budgets, rates, and costs is a powerful and yet untested weapon. Before today you knew more about General Motors than about UCSF Hospitals and Clinics. In my view an aggressive Commission using its current authority but finally exercising it, can strongly influence the behavior of hospitals. We should try disclosure before conscripting an army of budget reviewers and rate setters who will spend most of their time defending their actions in court with adversary hospitals who know more about their own costs than any external regulator can ever know. I am skeptical about Commission rate setting being equitable, even handed, and truly "economic', particularly if we try to price regulate 800 hospitals and 1400 nursing homes. At UCSF I have six good budget analysts, an able controller, and I exercise tight fiscal control. It is just not administratively sensible to do local hospital budgeting from Sacramento and make sound assessments of quality, price and productivity. Besides price fixing, in my view, has never been a meaningful device toward lowering costs.

If rate setting and budget approval is to be tried, the Commission is the proper arena and permissive authority should reside there for demonstration and evaluation.

VI. Rates of Return

Since I am opposed to rate setting regulations at this time the public needs protection on rates of return and surplus accumulation. At the outset this should be an integral part of disclosure and the hospital should specify how surpluses are being distributed and for what purposes. Voluntary and investor owned health facilities and other prepaid institutional providers should be treated the same.

## VII. Strengthening the Commission

The Commission should be a strong independent agency serving the citizenry of the State and the Hospitals. It needs a larger and stronger staff and a more aggressive stance. There should be fewer commissioners, perhaps nine of whom six should be intelligent public persons not aligned with the health field and three could be persons representing hospitals, medicine, and the State Department of Health. The Commission should expand disclosure, control capital resources and program development in health care institutions, and provide useful data that will help hospitals improve their efficiency. It should be more closely monitored by the legislature.

## VIII. Planning - The Missing Link

93-641 started out being a planning bill. It is liable to turn out to be a planning failure and a regulatory mishmash. The Legislature can straighten this out by:

(1) Concentrating some state fiscal resources at the Health Service Agency level so that real planning which is absolutely essential, can in fact take place.

(2) Asking the Governor and our Congressional representatives to amend the most undesirable feature of the federal law which provides that HSA's will determine the flow of tax dollars under the Public Health Service Act, the Mental Health Act, Alcoholism, and related federal programs. This responsibility must not be placed in local nonprofit agencies but returned to the jurisdiction of state governments.

HSA's should spend all of their time and effort in creative planning and not simply the reactive processes of the past. HSA's, if forced to regulate, will in my experience, be preempted from planning by the exigencies of regulation. Hospital services can be rationalized within regions by competent and effective planning bodies and we need them in place soon.

In summary I want to close with two sentences. First, hospitals are as variable and different individually as lawyers and I suppose legislators. Secondly, you must put teeth into a rational regulatory mechanism NOW - teeth in a system which recognizes these differences, is administratively feasible, but one which eliminates unnecessary costs, constrains essential costs, and doesn't strangulate a basically sound and reasonably well managed industry.

# UNIVERSITY OF CALIFORNIA HOSPITALS & CLINICS-SAN FRANCISCO

## SELECTED OPERATING AND STATISTICAL DATA

## COMPARATIVE PERIODS: BUDGET FY.75-76 vs ACTUAL FY.72-73

| | BUDGET FY.75-76 | ACTUAL FY.72-73 | % CHANGE |
|---|---|---|---|
| **KEY INDICATORS** | | | |
| Gross Operating Expense ($000) | $ 52,133 | $ 35,471 | 47.0% |
| Inpatient Admissions | 19,500 | 18,073 | 7.9% |
| Patient Days | 161,500 | 157,000 | 2.9% |
| % Occupancy | 79.0% | 76.8% | 2.9% |
| Ambulatory Units (Including Emergency) | 203,500 | 173,000 | 17.6% |
| Laboratory Procedures | 1,060,000 | 740,000 | 43.2% |
| X-Ray Procedures | 173,000 | 140,000 | 23.6% |
| Operating Room Hours | 27,760 | 21,167 | 31.1% |
| Cost of Living Index | 158.6 | 124.1 | 36% |
| **EXPENSE INDICATORS** | | | |
| Total Expenses ($000) | | | |
| Professional Services (Nursing, Radiology, Operating Rooms, Etc.) | $ 38,391 | $ 25,111 | 52.9% |
| Support Services (Dietary, Maid Services, Laundry, Etc.) | 13,742 | 10,360 | 32.6% |
| Total | $ 52,133 | $ 35,471 | 47.0% |
| **SELECTED PROFESSIONAL EXPENSES** | | | |
| Operating Rooms | | | |
| Total Expense ($000) | $ 3,042 | $ 2,009 | 51.4% |
| Cost Per Operating Hours | 109.58 | 94.91 | 15.8% |
| Laboratories | | | |
| Total Expense ($000) | $ 3,748 | $ 2,752 | 36.2% |
| Cost Per Test | 3.54 | 3.72 | (4.8%) |
| X-Rays | | | |
| Total Expense ($000) | $ 3,569 | $ 2,279 | 56.6% |
| Cost Per Procedure | 20.63 | 16.28 | 26.7% |
| Nursing | | | |
| No. Persons | 784 | 737 | 6.4% |
| Payroll Cost (Including Benefits) ($000) | $ 12,103 | $ 7,836 | 54.5% |
| Payroll Per FTE | $ 15.4 | 10.6 | 45.3% |

| | | BUDGET FY.75-76 | ACTUAL FY.72-73 | % CHANGE |
|---|---|---|---|---|
| Malpractice | | | | |
| Total Expense | ($000) | $ 1,124 | $ 212 | 430.2% |
| Residents & Interns | | | | |
| Total Expense | ($000) | $ 3,578 | $ 2,526 | 41.6% |

## SELECTIVE SUPPORT SERVICES

| | | BUDGET FY.75-76 | ACTUAL FY.72-73 | % CHANGE |
|---|---|---|---|---|
| Laundry | | | | |
| Total Expense | ($000) | $ 1,171 | $ 1,040 | 12.6% |
| Cost Per Processed Pound | | .23 | .25 | (8.0%) |
| Processed Pounds Per Employee | | 68,448 | 51,735 | 32.3% |
| Housekeeping | | | | |
| Total Expense | ($000) | $ 1,221 | $ 774 | 57.8% |
| Cost Per Sq.Ft. Cleaned | | 2.09 | 1.83 | 14.2% |
| Billing and Collection | | | | |
| Total Expense | ($000) | $ 3,891 | $ 3,675 | 5.9% |
| Expense per $1.00 Billed | | $ .07 | .10 | (30.0%) |

Prepared for Testimony Before Assembly Health Committee
10/15/75

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